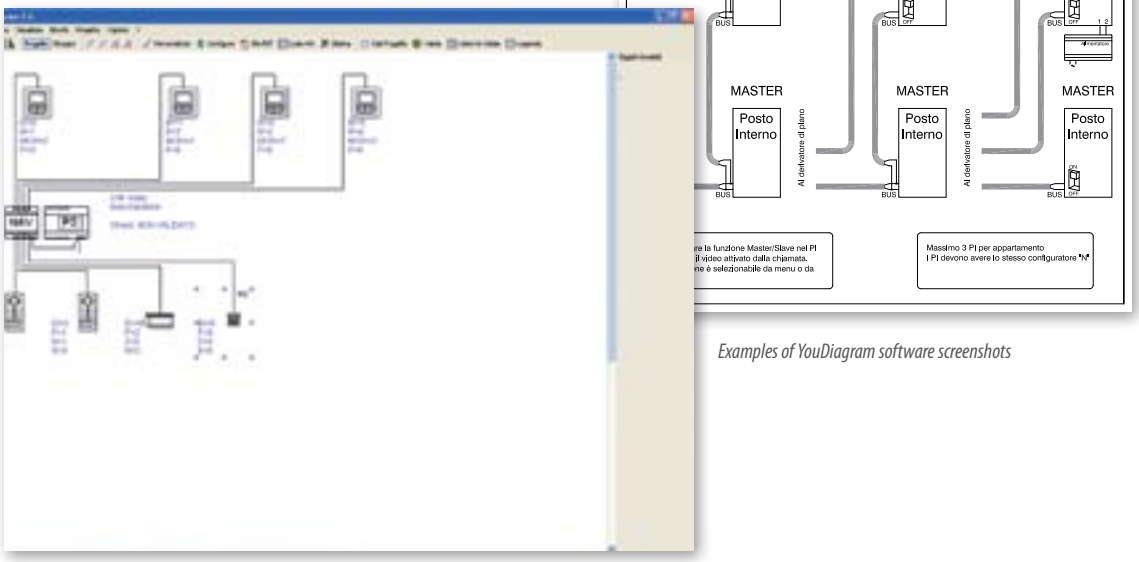
bticino

TECHNICAL GUIDE

PRE-SALE SERVICE

BTICINO supports the creation of 2 WIRE door entry and video door entry systems with a dedicated estimate software.

> **YouDiagram software,** for the design of the system and the preparation of estimates - free to download from the **www.bticino.com website**



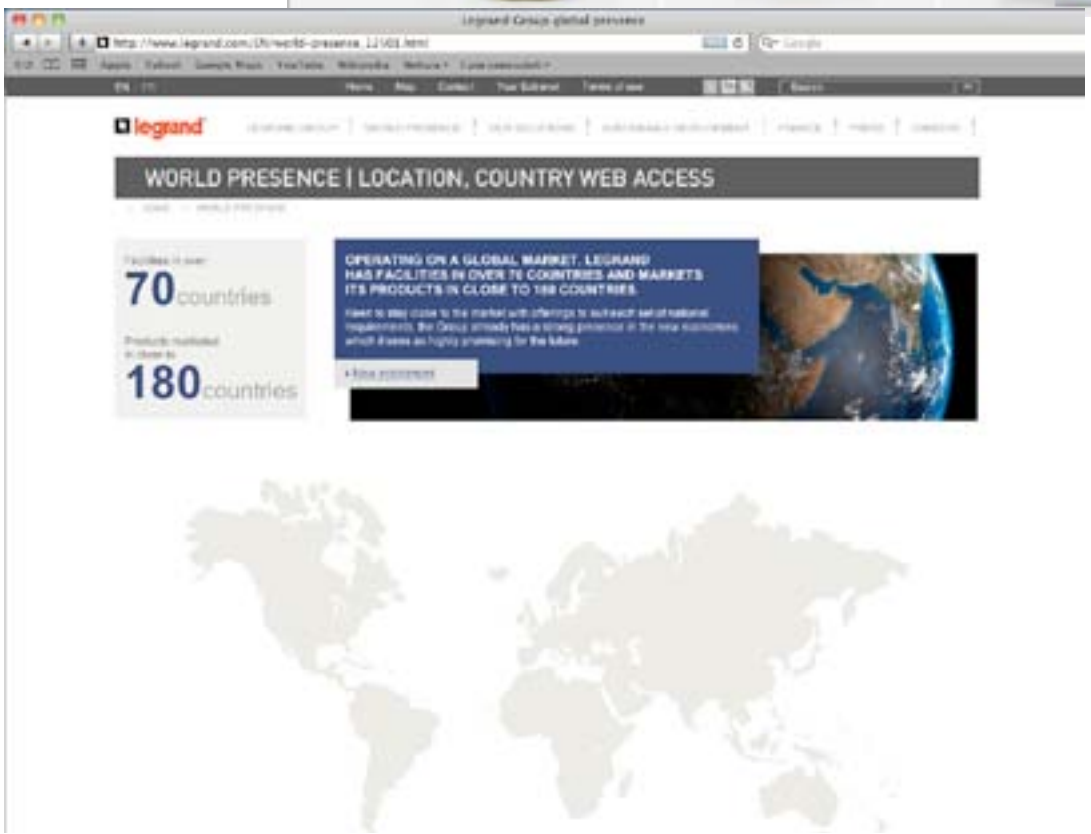
Examples of YouDiagram software screenshots

With YouDiagram, just a few steps are enough to design a system diagram, configure the devices, and check the absorptions on the system BUS.

> For further **TECHNICAL INFORMATION** see "Video door entry system technical guides"

AFTER SALE SERVICE

> For after sales TECHNICAL ASSISTANCE, please refer to the **www.bticino.com** and **www.legrand.com** - **WORLD PRESENCE** Web Sites in order to find your nearest subsidiaries :



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TO GUARANTEE REALISATION ON INDESIGN LEVELS

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TO GUARANTEE REALISATION ON INDESIGN LEVELS

The technical sheets

The pages that follow provide all the technical information to assess, design, and install 2 wire door entry and video door entry systems.
For detailed information on individual devices refer to the corresponding "Technical Sheets". These can be selected by **item code No.**
For each device, the corresponding technical sheet offers information on:

- Product description;
- Related items;
- Dimensional and technical data;
- Configuration;
- Wiring diagram, if required.

You can access to the product technical sheets from:
www.bticino.com - product info

Icons of the systems the device belongs to

Description

Device drawing

Configuration

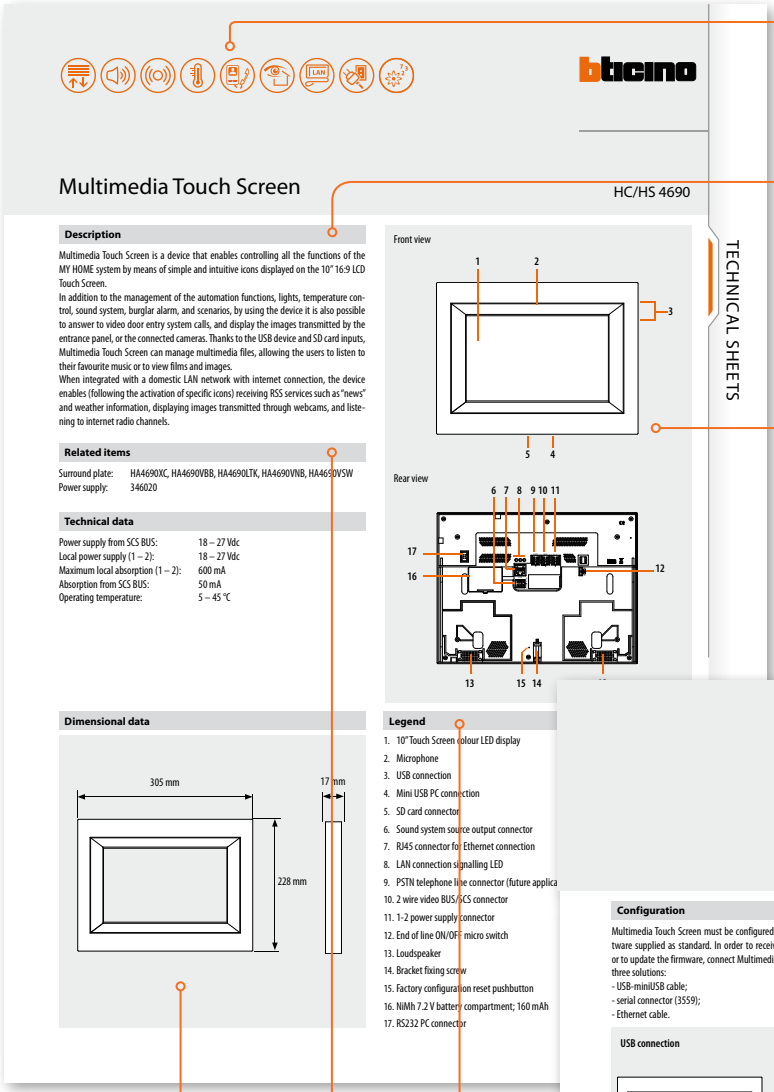
Assembly, Installation

Dimensional data

Technical data

Legend

Specific wiring diagrams



bticino

Multimedia Touch Screen

HC/HS 4690

TECHNICAL SHEETS

Description

Multimedia Touch Screen is a device that enables controlling all the functions of the MY HOME system by means of simple and intuitive icons displayed on the 10" 16:9 LCD Touch Screen.
In addition to the management of the automation functions, lights, temperature control, sound system, burglar alarm, and scenarios, by using the device it is also possible to answer to video door entry system calls, and display the images transmitted by the entrance panel, or the connected cameras. Thanks to the USB device and SD card inputs, Multimedia Touch Screen can manage multimedia files, allowing the users to listen to their favourite music or to view films and images.
When integrated with a domestic LAN network with internet connection, the device enables (following the activation of specific icons) receiving RSS services such as "news" and weather information, displaying images transmitted through webcams, and listening to internet radio channels.

Related items

Surround plate: HA4690XC, HA4690VBB, HA4690LTK, HA4690VNB, HA4690VSW
Power supply: 346020

Technical data

Power supply from SCS BUS:	18 – 27 Vdc
Local power supply (1 – 2):	18 – 27 Vdc
Maximum local absorption (1 – 2):	600 mA
Absorption from SCS BUS:	50 mA
Operating temperature:	5 – 45 °C

Front view

Rear view

Dimensional data

Legend

1. 10" Touch Screen colour LED display
2. Microphone
3. USB connection
4. Mini USB PC connection
5. SD card connector
6. Sound system source output connector
7. RJ45 connector for Ethernet connection
8. LAN connection signalling LED
9. PSTN telephone line connector (future applica
10. 2 wire video BUS/ACS connector
11. 1-2 power supply connector
12. End of line ON/OFF micro switch
13. Loudspeaker
14. Bracket fixing screw
15. Factory configuration reset pushbutton
16. NiMh 7.2 V battery compartment; 160 mAh
17. RS232 PC connector

bticino

HC/HS 4690

TECHNICAL SHEETS

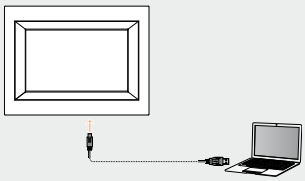
Configuration

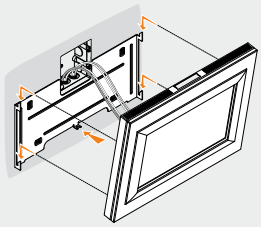
Multimedia Touch Screen must be configured using the TiMultimediaTouchScreen software supplied as standard. In order to receive/transfer the configuration performed, or to update the firmware, connect Multimedia Touch Screen to the PC using one of the three solutions:
- USB-miniUSB cable;
- serial connector (3559);
- Ethernet cable.

Installation

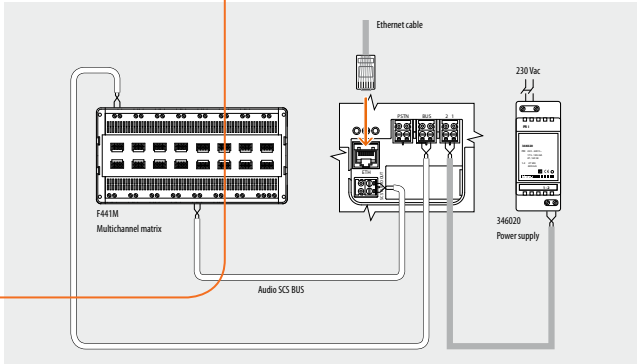
Connect Multimedia Touch Screen to the system and fix it to the wall using the bracket supplied with the product.

USB connection





Wiring diagrams



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3

2 WIRE system, the simplest solution for all installations

YOUR JOB IS EASIER

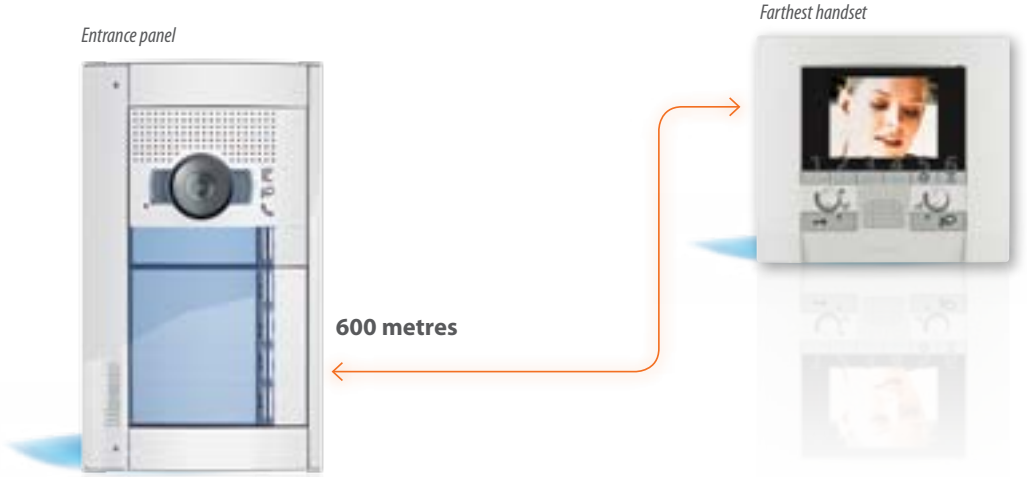
The 2-WIRE system is easy to use. Thanks to the NON POLARIZED 2-wire wiring used in each part of the system, connection is simple, quick, and error-proof. There will be no more mistakes, and therefore no need to waste time in subsequent adjustments.

HIGH PERFORMANCES

Thanks to the 2-WIRE technology, it is possible to install with the same ease any type of systems, from those in single villas, to those for whole groups of apartment blocks.
Also, thanks to the possibility of using the existing cables, it represents the ideal solution when refurbishment existing systems.

THE SYSTEM MAY INCLUDE:

3900	*Apartments*	**3900**	*Apartment video entrance panels*
5	*Handsets per apartment*	**39**	*Risers with indepedent sound mode*
96	*Common video entrance panels*		



The villa | The apartment | The group of apartment blocks | Complexes of small houses

MAXIMUM VERSATILITY

The 2-WIRE system has been conceived to ensure a high level of versatility, to meet the needs of each and every customer.
The 2-WIRE technology enables installing a door entry system already preset for future conversion into a video system, and is ideal when a mixed audio/video system is required, to meet the needs of individual residents. The system also offers a wide range of entrance panels and handsets, to meet all the needs of the customer: from the basic door entry system functions, to the more advanced ones, to the integration with home automation applications, or look integration with BTicino residential series.

INTEGRATION WITH IP TECHNOLOGY

IP and 2-WIRE technologies may be integrated, for the realisation of large projects. Thanks to the dedicated LAN network, IP technology offers high system performances: long distances, multichannel operation, switchboard software and centralised alarm notification.

THE SYSTEM MAY INCLUDE:

1000	*Video entrance panels*	**10,000**	*Video handsets*
100	*IP devices*	**10 Km**	*Distance from the Entrance Panel to the latest Handset*
5	*Simultaneous calls on the IP backbone*		

IP Switchboard software

IP to 2 WIRE interface

The main devices

ENTRANCE PANEL

Outdoor audio or video pushbutton panel with camera. It can be used to call the video handsets and to activate the associated door lock. Available in various look and installation models.

Flush mounted cameras

Video entrance panel

SFERA Robur entrance panel

SFERA New entrance panel

Audio entrance panel

INDOOR CAMERAS

2 WIRE indoor black&white and colour camera that can be connected directly to the system 2 WIRE BUS. Microphone for the room monitoring function. Available in the LIVINGLIGHT and AXOLUTE versions. To be completed with the corresponding front cover plates.

AUDIO AND VIDEO HANDSETS

Audio and video handsets for the audio and video reception of entrance panel calls. Using the available icons, the advanced devices can be used to manage the video door entry system functions and the home automation functions. Available in various look and installation models.

Axolute Video Station Whice

Swing video handset

Audio Polyx

Polyx Memory Display

Outdoor camera

OUTDOOR CAMERA

2 WIRE outdoor colour camera with 6 mm fixed optics to be connected directly to the 2 WIRE SCS BUS.
Protection index: IP65

Floor shunt

FLOOR SHUNT

The floor shunt can be used to create star wiring systems. Its use is compulsory for installation in simultaneous switching on systems.

APARTMENT INTERFACE

To create a dedicated system inside the Apartment, separate from the apartment complex riser.
In the apartment, it will therefore be possible to create a video door entry system with dedicated entrance panels and cameras, integrated with the home automation system.

Apartment interface

ACTUATORS

Used for the control of electric locks, or the management of generic loads (e.g. staircase lights, call repetition, etc.).

Door lock actuator

Timed door lock actuator

Actuator for generic loads

SYSTEM EXPANSION MODULE

Used to increase the number of devices connected to the system and to achieve maximum installation distance.

System expansion module

The main devices

Audio/video node

Video adapter

AUDIO/VIDEO NODE AND VIDEO ADAPTER

They perform the function of audio/video mixers, for the connection to the system of entrance panels and video handsets.

The audio/video node can be used to connect up to 4 entrance panels / cameras and up to 4 risers.

The video adapter on the other hand can be used to connect 2 entrance panels and 1 riser (or 1 entrance panel and 2 risers).

During presetting, the inclusion of the audio/video node is recommended, to allow for future system expansions.

SYSTEM POWER SUPPLIES

They are used to generate the system 2 WIRE BUS and power the system devices. The 10 DIN - 346000 version supplies a current of up to 1.2 A.

The 2 DIN - 346030 version supplies a current of up to 600 mA and includes the video adapter function, which makes it suitable for small single family audio or video systems.

When installing the system we recommend that power supply item 346000 is used, as this will enable future system expansions.

System power supply

Compact power supply

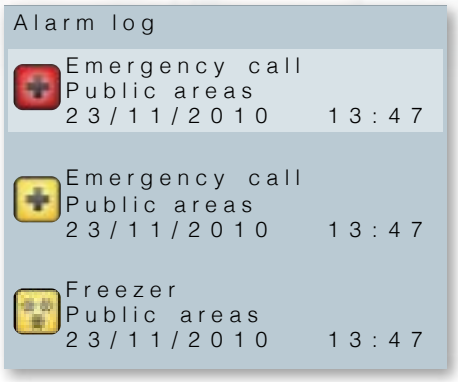
Audio power supply

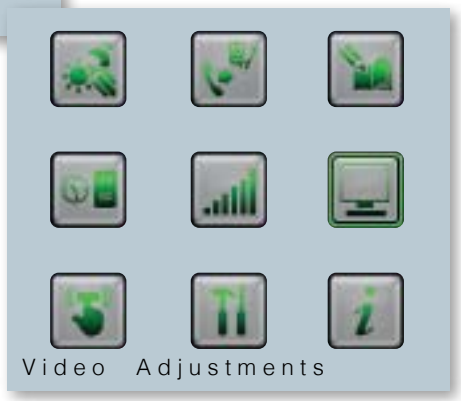
Switchboard

2 WIRE SWITCHBOARD

This is a table-top device for 2 WIRE multi-family systems, which provides access to the various apartment complex video door entry system functions: intercommunication among apartments, door lock management, light switching-on management, monitoring of cameras installed on common areas, and monitoring of apartment alarms.
It has a large 7" colour LCD display with icon menu, handset, and handsfree function. It includes the possibility of creating a handset, entrance panel, and switchboard address book. It is possible to connect up to a maximum of 16 switchboards.

Switchboard





System composition

In addition to the entrance panels and handsets, the installation of the system only requires a few additional accessories, which must always be connected using the 2 WIRE system. The system created using the "2 WIRE system" is classed as **SELV (Safety Extra – Low Voltage)** due to the fact that it is powered by non grounded safety double insulation independent power supplies with a max. voltage of 25 Vac (effective) or 60 Vdc non-inverted voltage. In addition, all BTicino devices are double insulated. The conformity to **SELV** classification is only guaranteed only subject to **FULL COMPLIANCE** with current installation regulations and with the **GENERAL RULES FOR INSTALLATION** relating to each single device and cable, making up the installation, issued by BTicino.

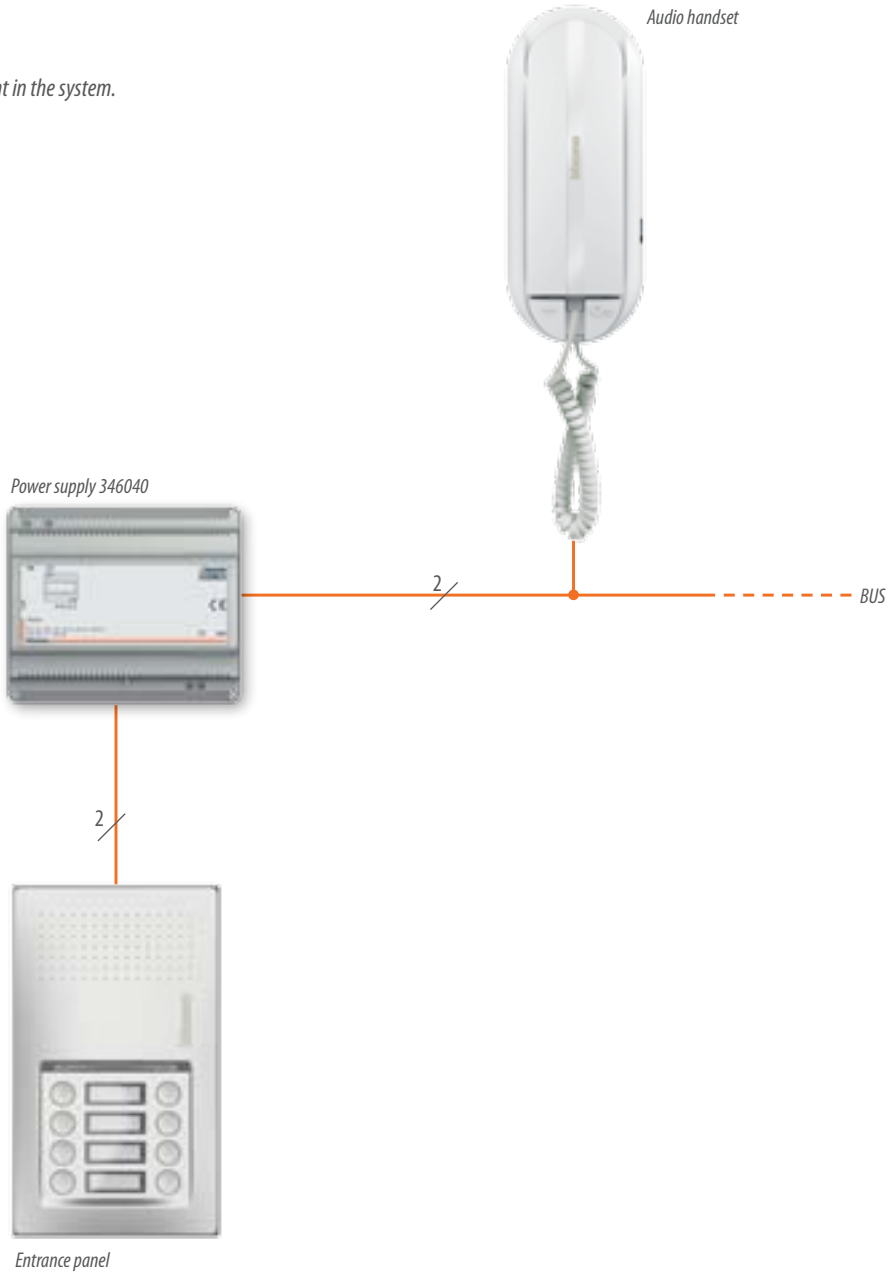
BASIC ELEMENTS – AUDIO SYSTEM

In order to install an audio system, the following must be purchased:

- Entrance panel
- Handset
- Power supply

Notes: - connections with 2 non-polarised wires;

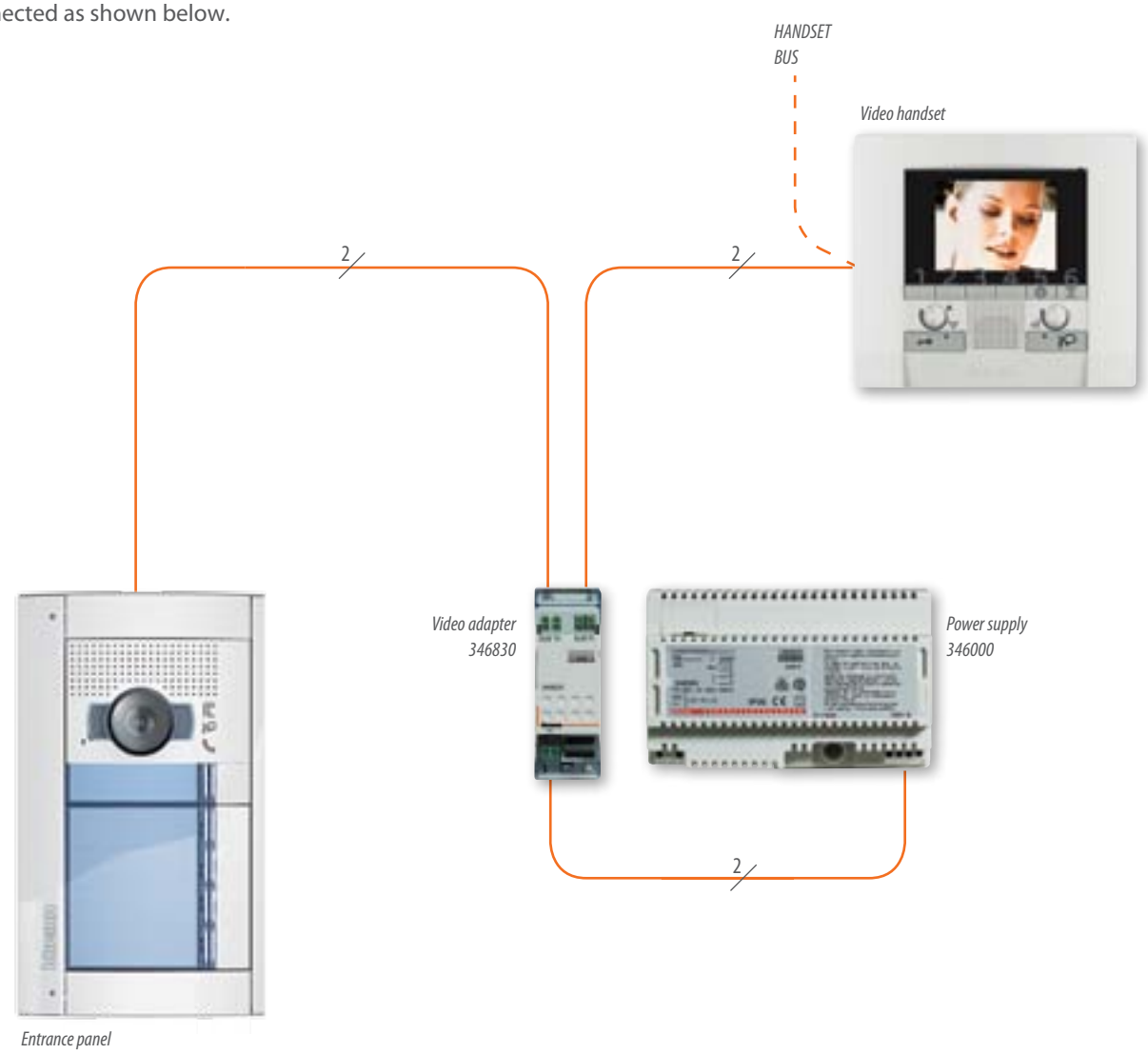
- devices that may be connected to any point in the system.



System composition

BASIC ELEMENTS - VIDEO SYSTEM WITH VIDEO ADAPTER, ITEM 346830

In order to create a video system, in addition to the entrance panel, handset, and power supply, it is also necessary to purchase the video adapter, item 346830, which must be connected as shown below.

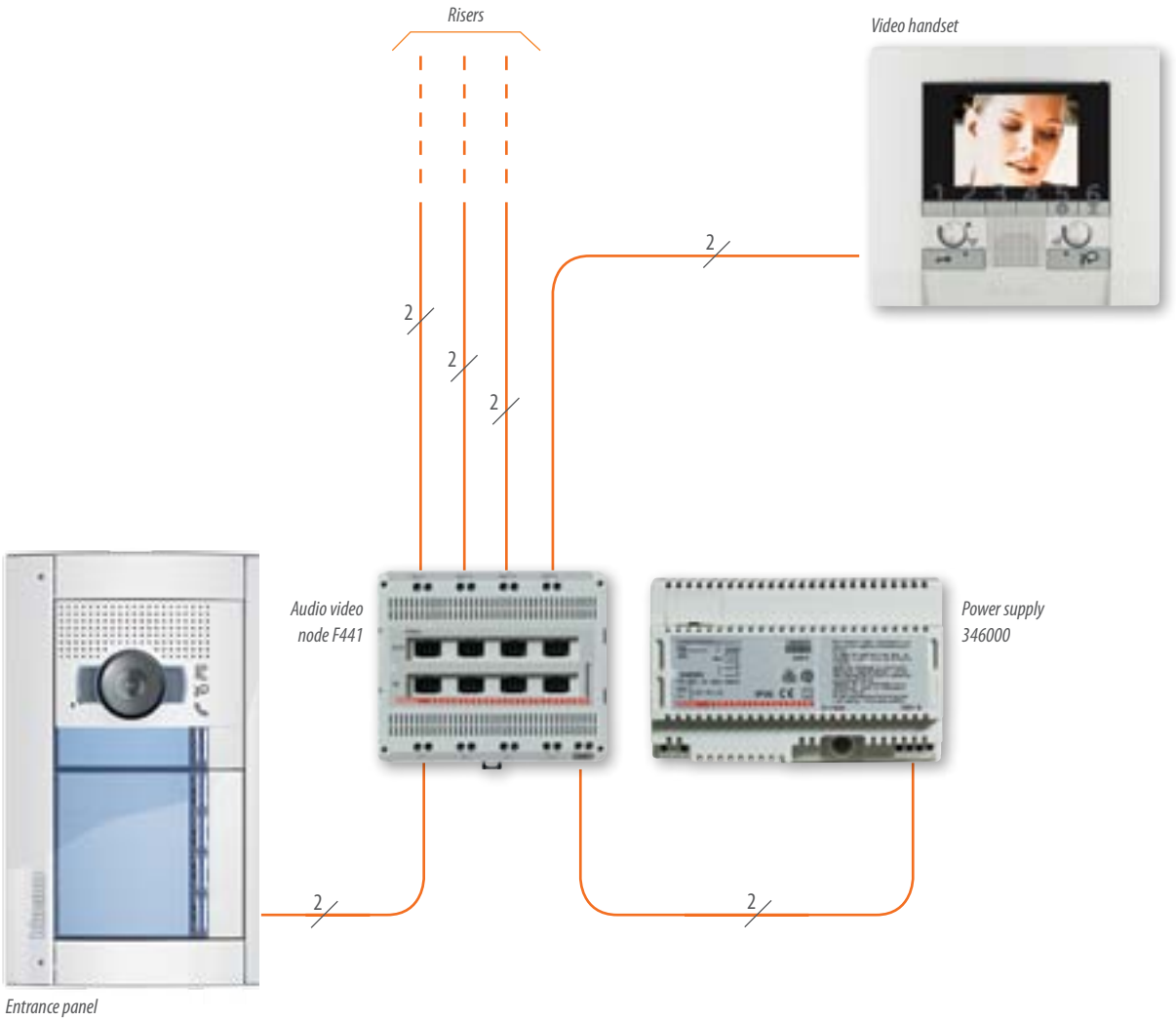


Notes: - Connections with 2 non-polarised wires;

- A maximum of 3 connections are allowed on the video adapter item346830 (2 entrance panels + 1 riser or 1 entrance panel + 2 risers).

BASIC ELEMENTS - VIDEO SYSTEM WITH AUDIO/VIDEO NODE, ITEM F441

The F441 audio/video node must be used in alternative to the video adapter when more than 2 entrance panels need to be installed, or when more than 2 risers are required.
An output of the audio/video node should be dedicated to each table-top video handset.



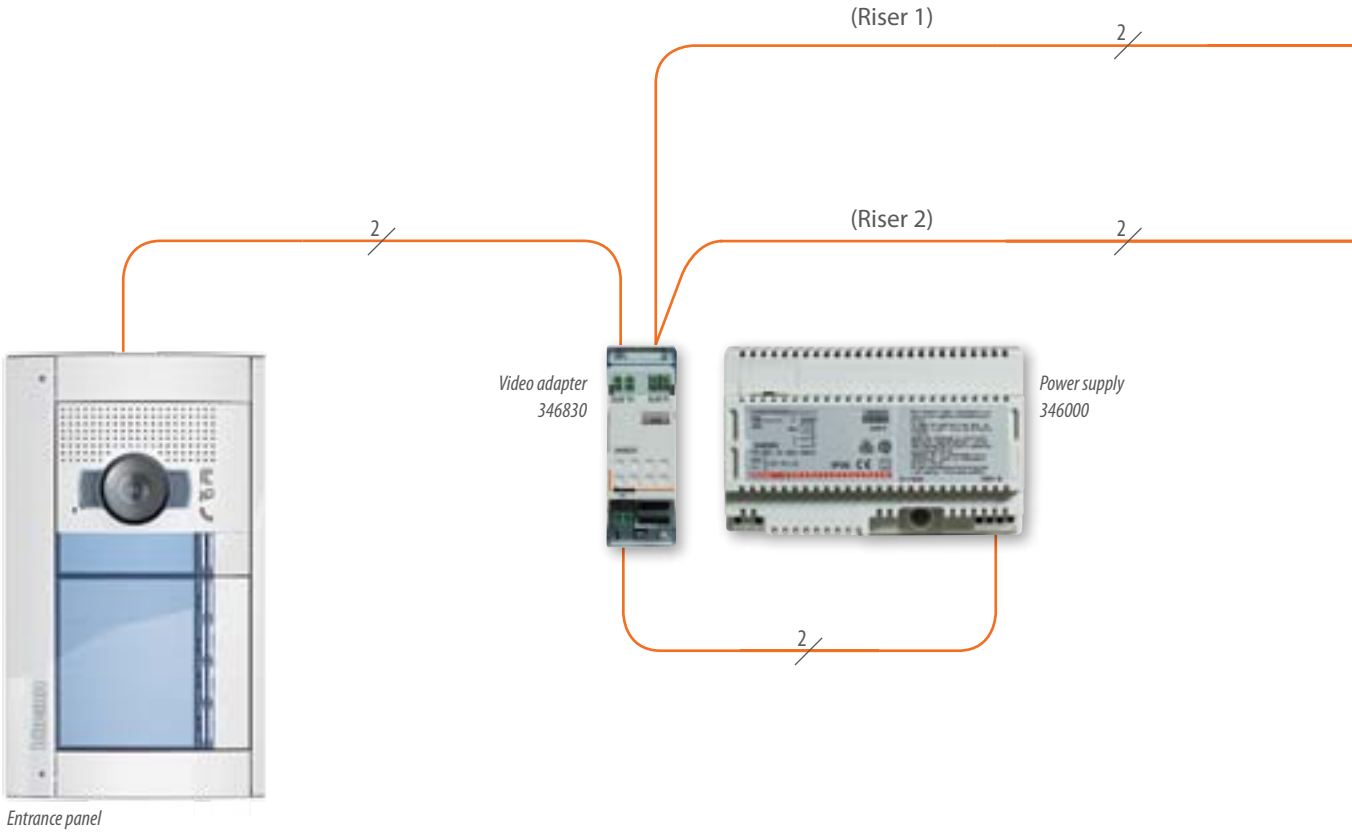
Notes: - Connections with 2 non-polarised wires;

- On each riser on the output of the F441 audio/video node it is possible to connect up to 26 handsets (100 Handsets maximum in the system) and 6 floor shunts, item 346841.

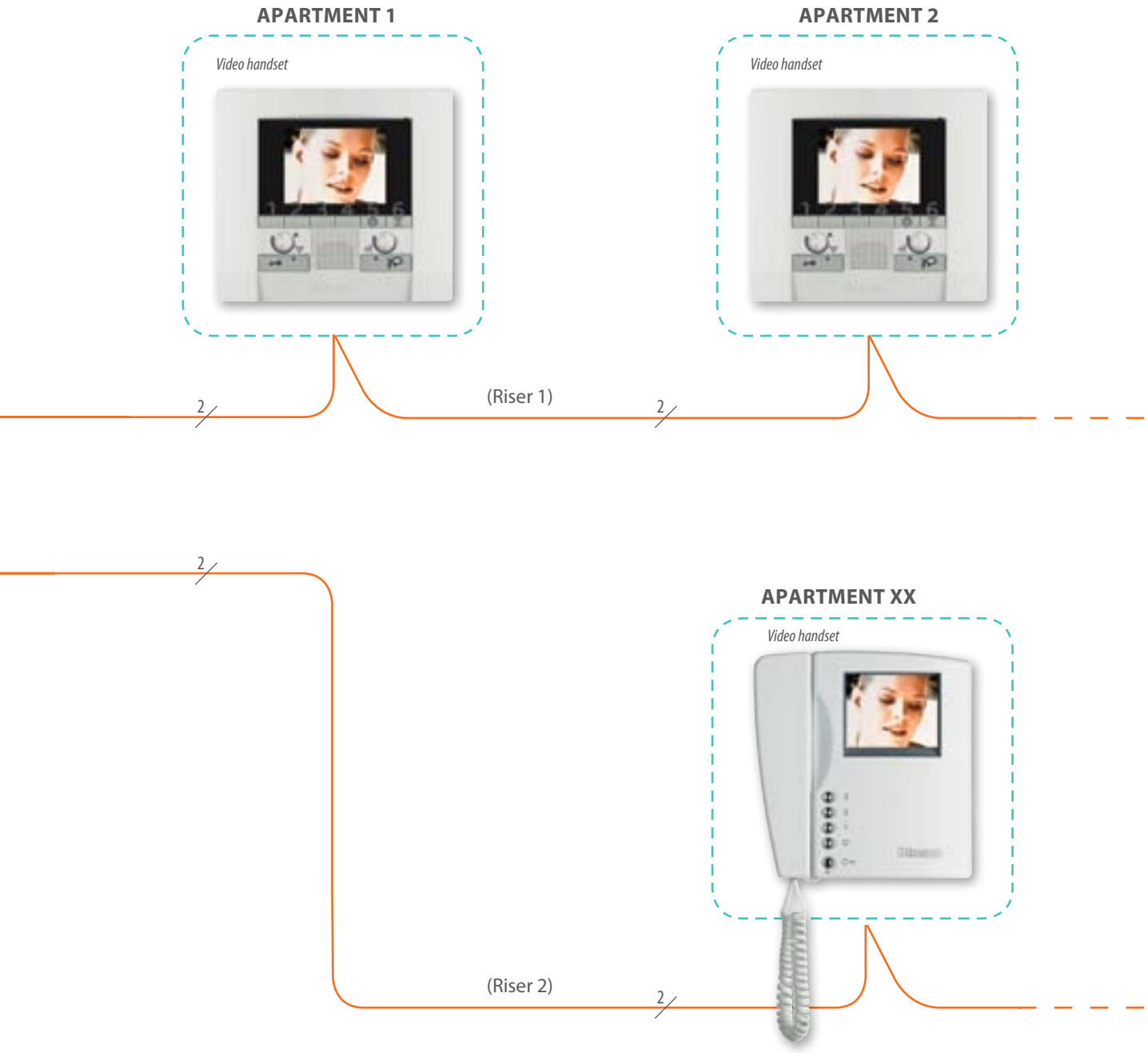
System composition

BASIC ELEMENTS - APARTMENT BLOCK SYSTEM WITH 346830 VIDEO ADAPTER

The floor shunts (item 346841) can be used to install video systems.
This will provide important savings on the cable needed.
It is particularly suitable for multi-family systems, with several households on the same floor, or in multi-family systems where maximum distance between the entrance panel and the handsets is needed. The floor shunt can be used to connect up to 4 apartments with maximum 3 apartment handsets (maximum 1 handset per output if they need to be switched on at the same time) using a star type connection.



Note: connections with 2 non-polarised wires.


APARTMENT 1
Video handset
APARTMENT 2
Video handset
2
(Riser 1)
2
2
APARTMENT XX
Video handset
(Riser 2)
2

System composition

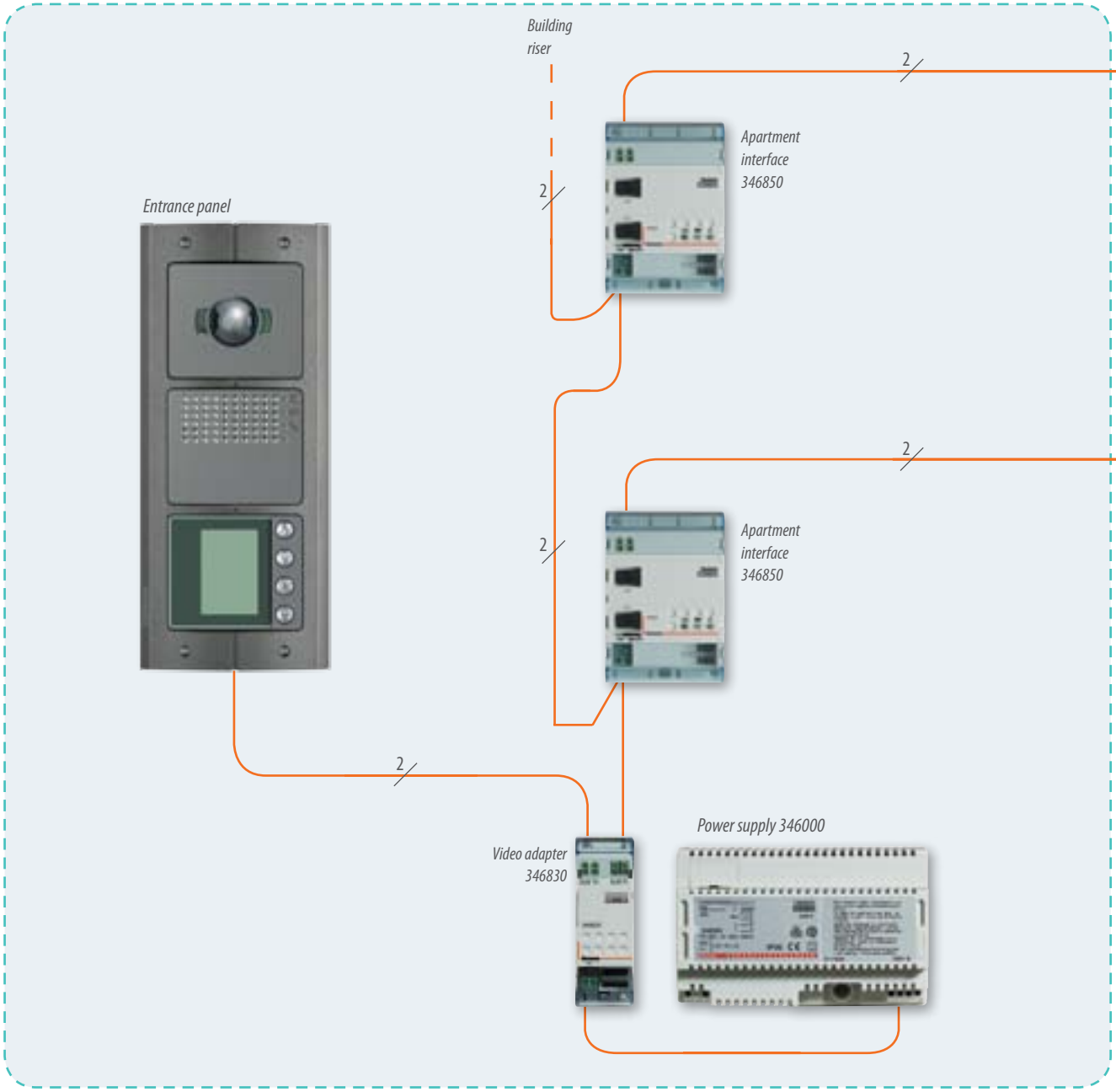
APARTMENT SYSTEM INDEPENDENT FROM THE APARTMENT COMPLEX SYSTEM

Example of connection to be used for an apartment system independent from the building.

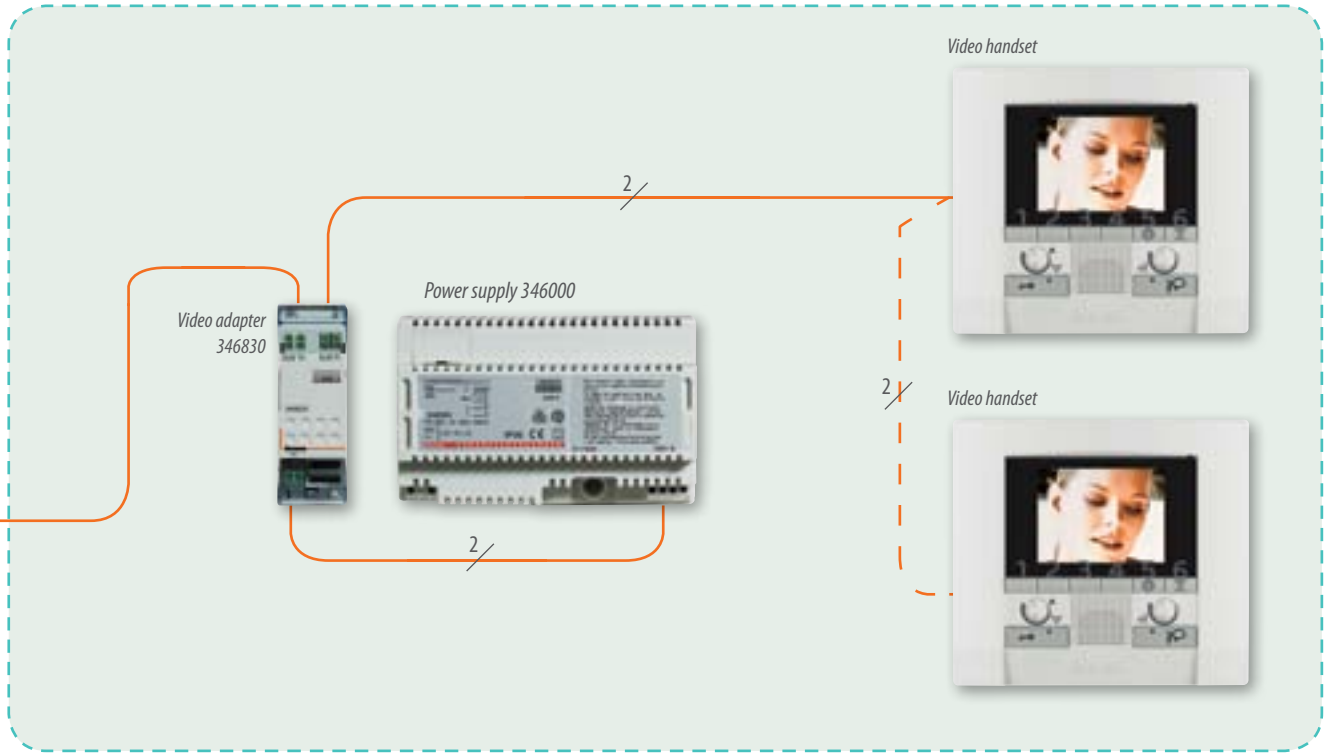
In this way, the apartment system can have private cameras and entrance panels and can be integrated with all the home automation applications.

With the 346850 apartment interface it is possible to install an independent audio intercom inside the apartment.

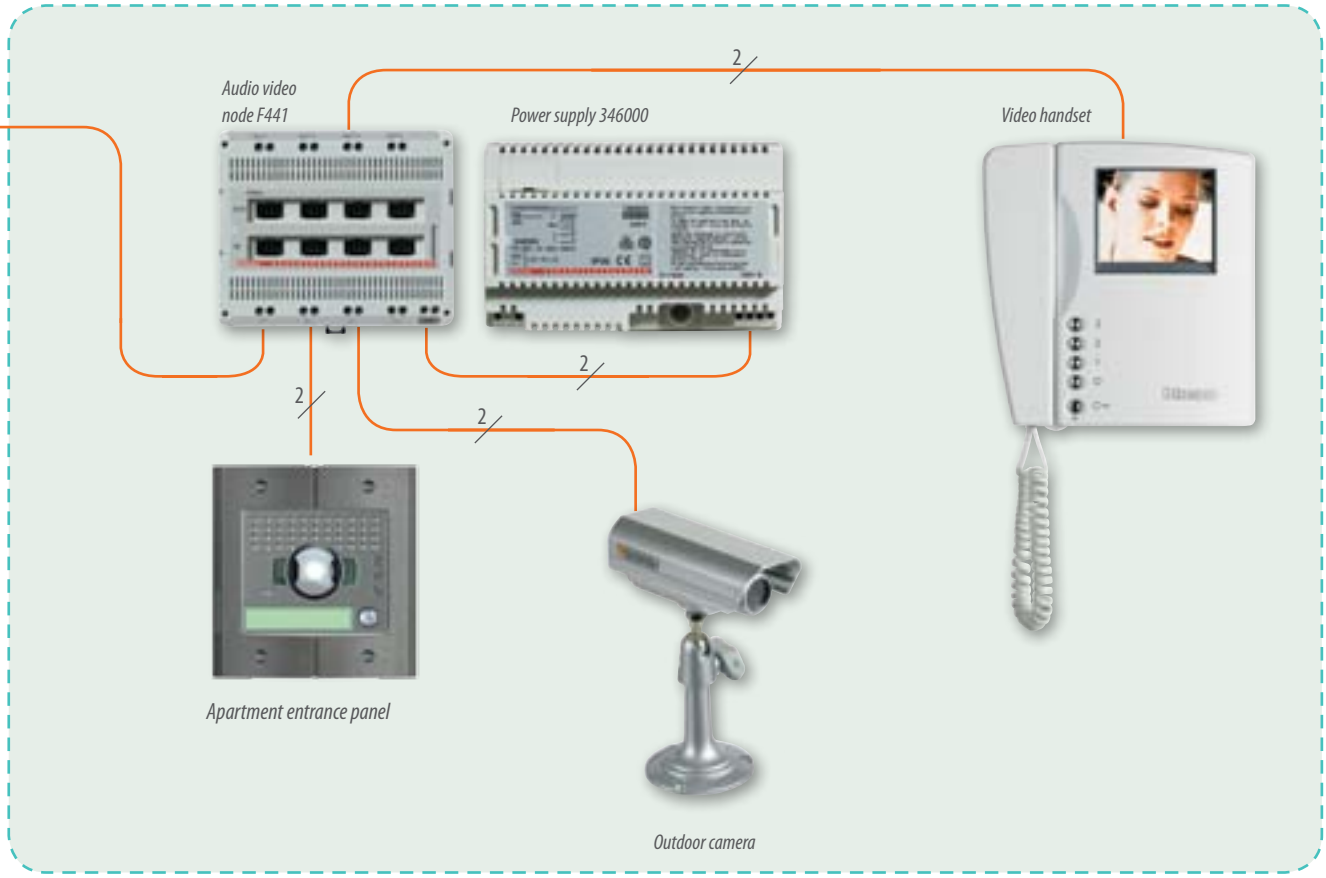
APARTMENT BLOCK SYSTEM



APARTMENT BLOCK SYSTEM 2



APARTMENT BLOCK SYSTEM 1



Notes: - Connections with 2 non-polarised wires
- Apartment 1 with dedicated 2 wire entrance panel and camera; apartment 2 with several video handsets (5 maximum).

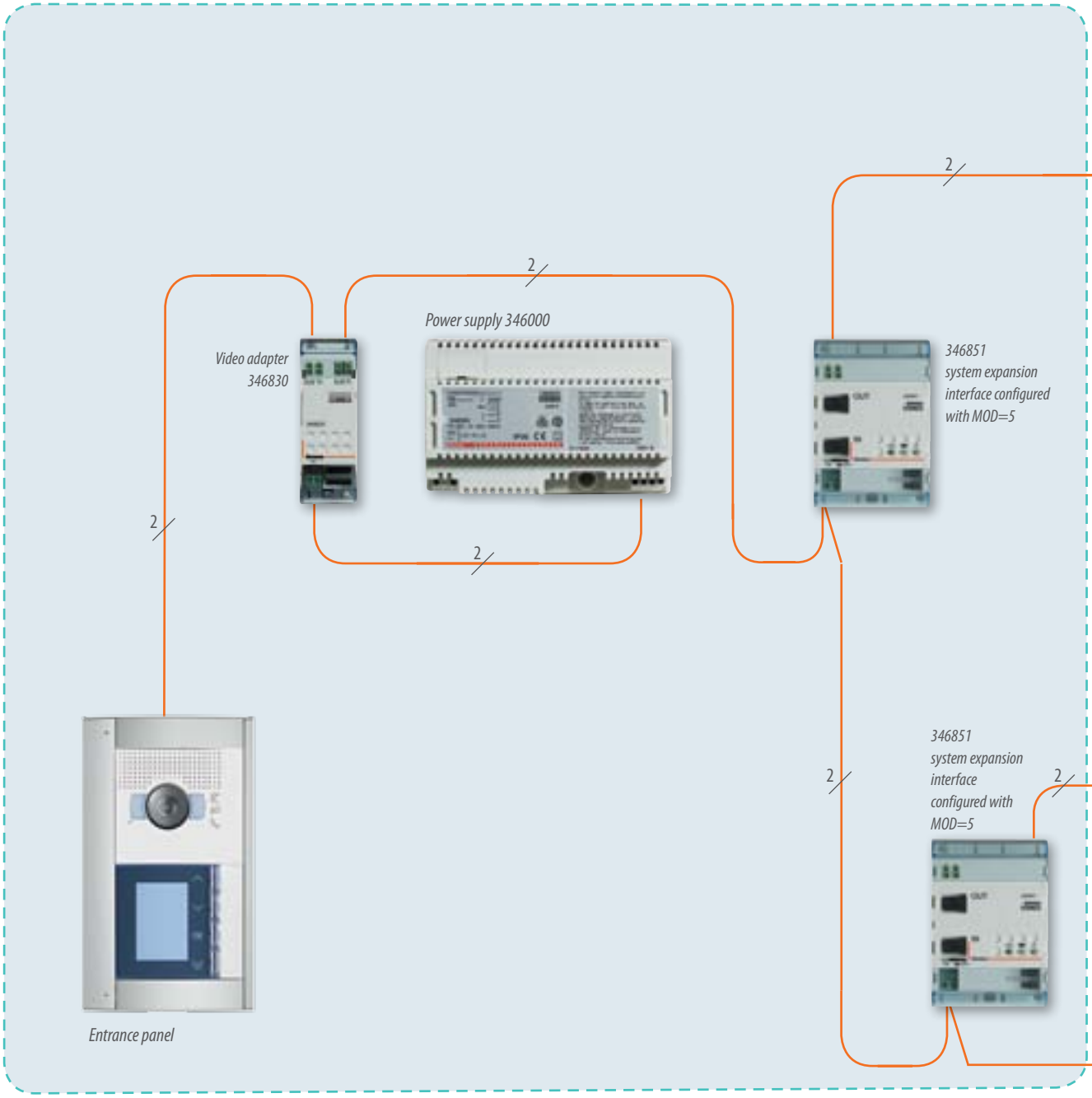
System composition

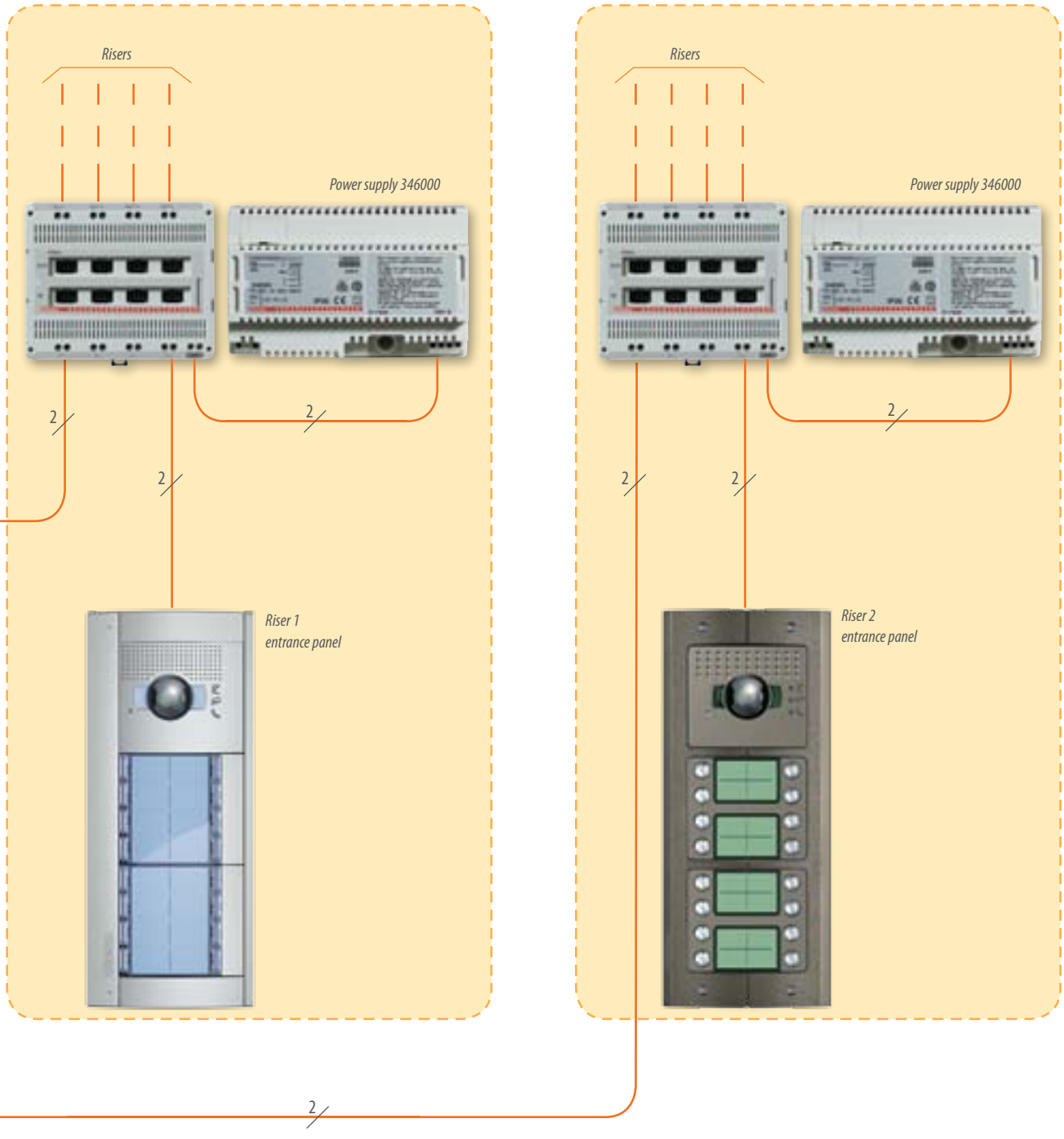
SYSTEM EXPANSION WITH INDEPENDENT AUDIO RISERS

This is used in buildings to have risers with riser entrance panels and independent audio and video functions.

Notes: - connections with 2 non-polarised wires;
- the 346851 system expansion interface, configured with MOD=5, gives the possibility of installing several risers with independent audio.

COMMON SYSTEM SECTION




Risers
Power supply 346000
2
2
2
Riser 1
entrance panel
Risers
Power supply 346000
2
2
2
Riser 2
entrance panel
2
To other interfaces 346851

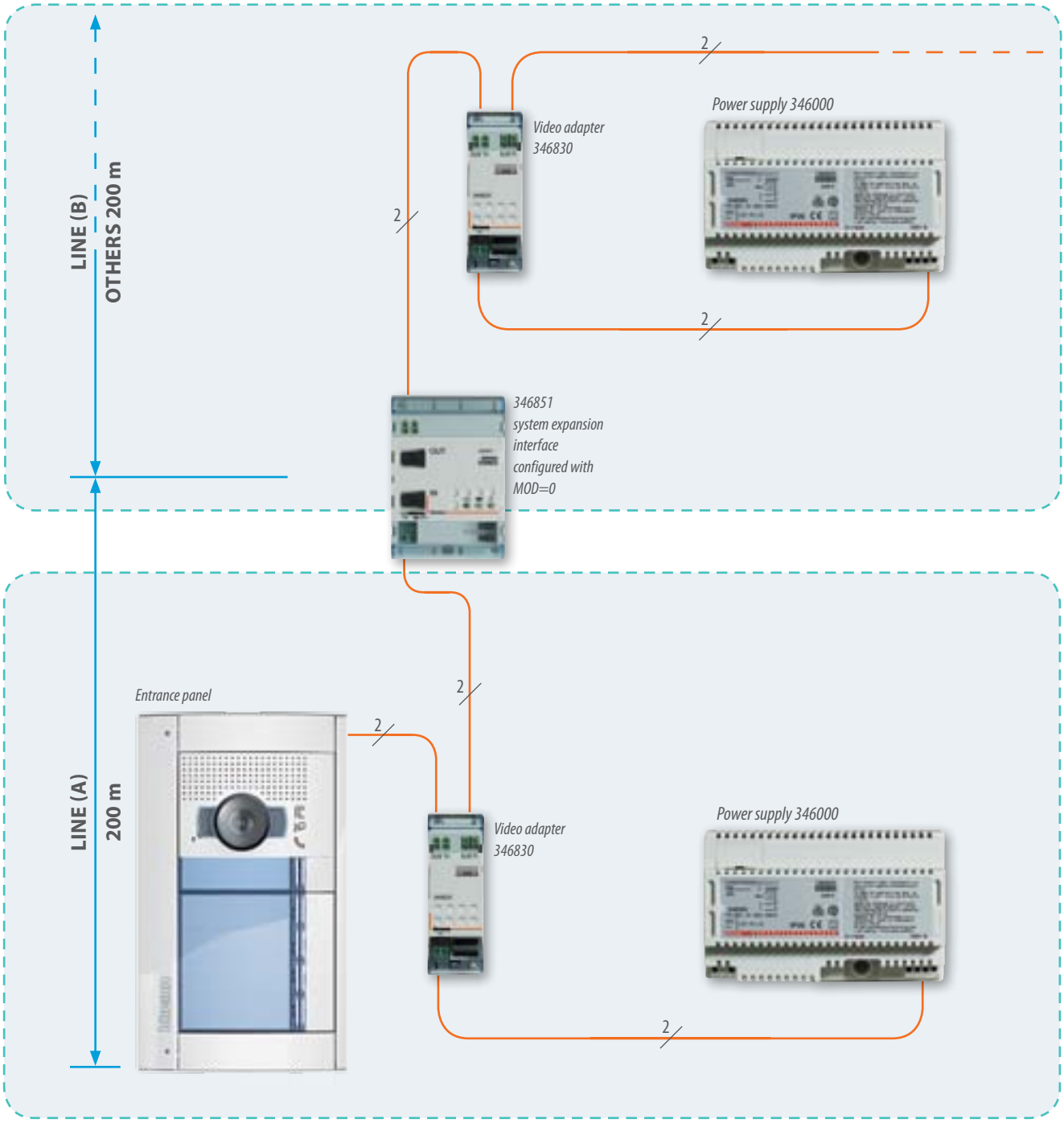
System composition

SYSTEM EXPANSION MODE - EXAMPLE 1

To be used for system expansion, in order to:

- Regenerate the video signal and have a further 200 m available after the interface (using the 336904 cable)
- Increase the number of devices connected to the BUS
- Use a max. of 3 modules, configured using the MOD = 0 in cascade.

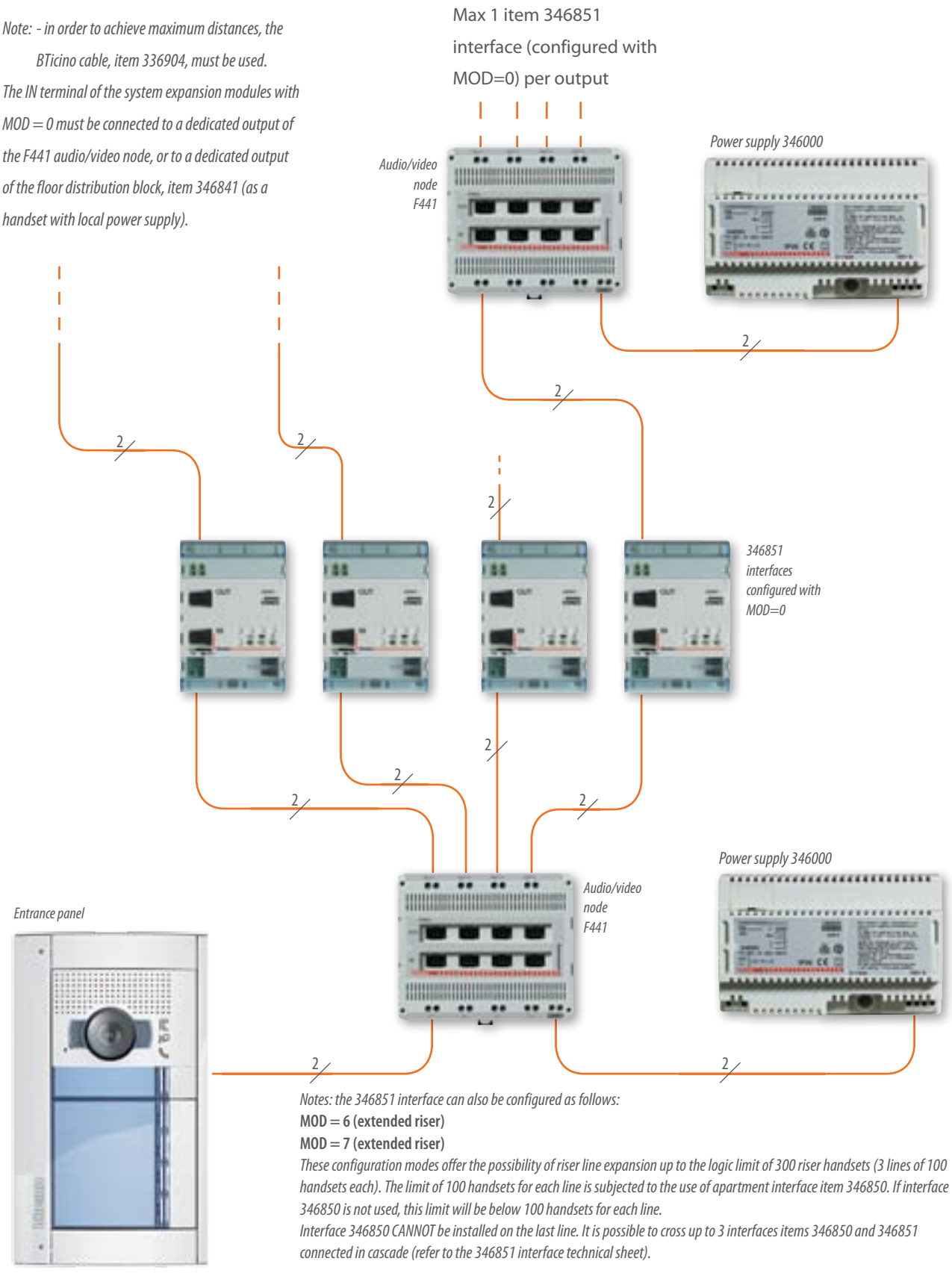
Notes:- 200 m with BTicino cable, item 336904
- Up to a maximum of 3 x 346851 interfaces in cascade (600 m max.)
- In the (A) line the 346851 interface must be considered as a handset
- In the (B) line it must be considered as an entrance panel



SYSTEM EXPANSION MODE - EXAMPLE 2

Note: - in order to achieve maximum distances, the BTicino cable, item 336904, must be used.

The IN terminal of the system expansion modules with MOD = 0 must be connected to a dedicated output of the F441 audio/video node, or to a dedicated output of the floor distribution block, item 346841 (as a handset with local power supply).



Notes: the 346851 interface can also be configured as follows:

MOD = 6 (extended riser)

MOD = 7 (extended riser)

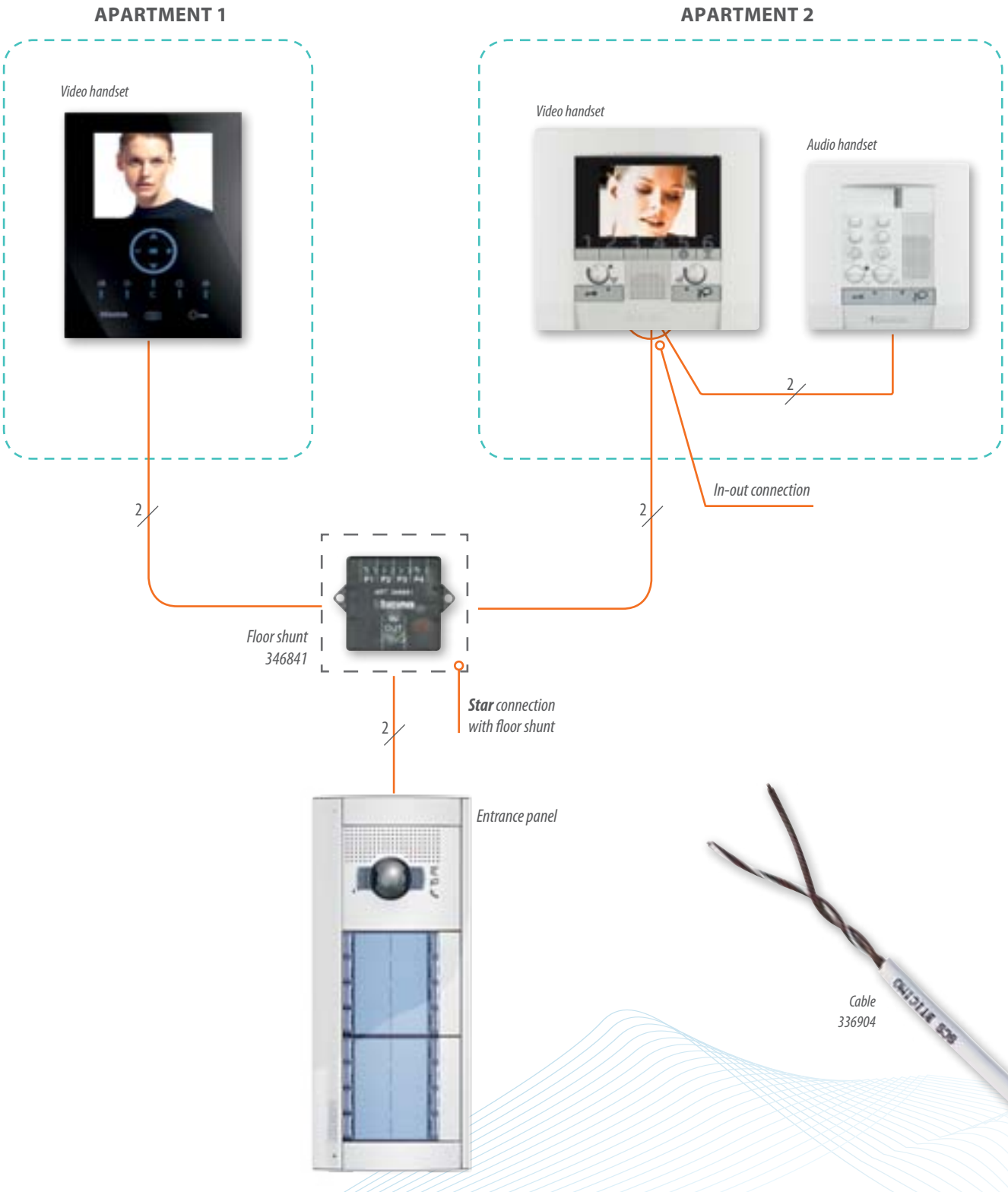
These configuration modes offer the possibility of riser line expansion up to the logic limit of 300 riser handsets (3 lines of 100 handsets each). The limit of 100 handsets for each line is subjected to the use of apartment interface item 346850. If interface 346850 is not used, this limit will be below 100 handsets for each line.

Interface 346850 CANNOT be installed on the last line. It is possible to cross up to 3 interfaces items 346850 and 346851 connected in cascade (refer to the 346851 interface technical sheet).

The wiring

Simple and quick error-proofs:

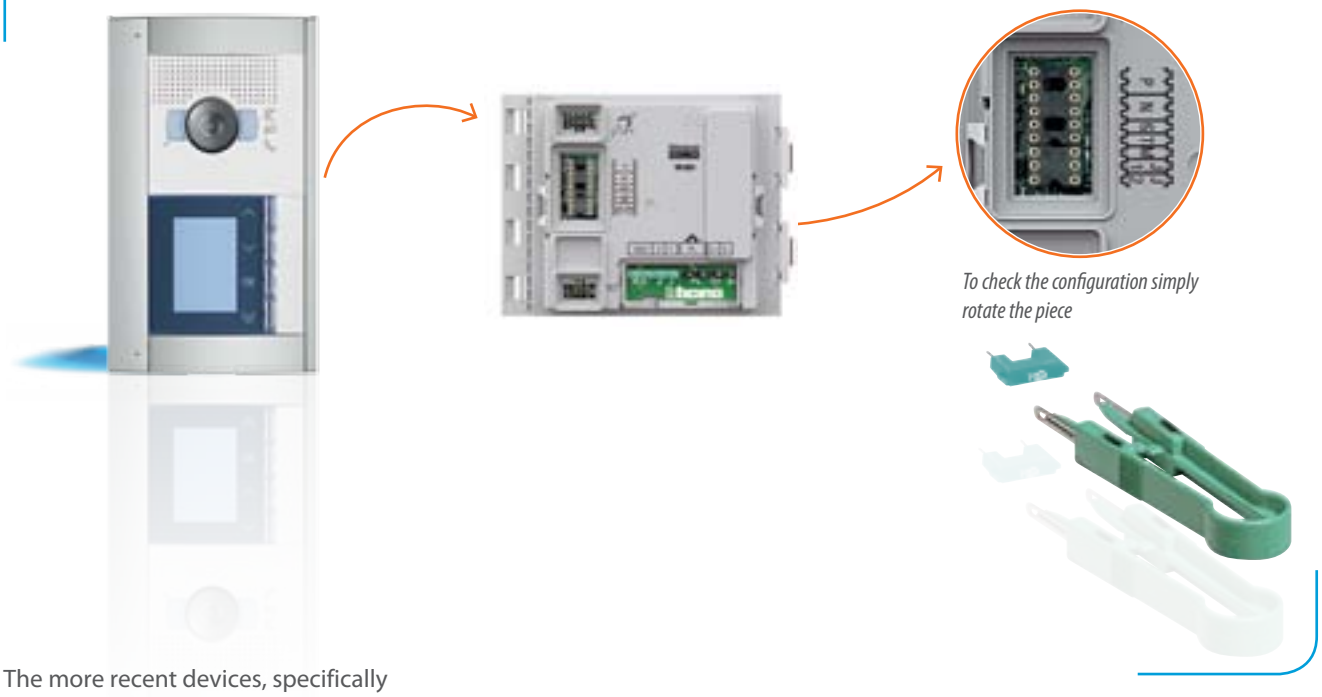
2 unpolarized wires in every part of the system.



The configuration

The configuration assigns a progressive address to the device within the system and programmes it in a simple, quick and intuitive way.

The devices (entrance panels, handsets, system accessories) must be physically configured using configurators.

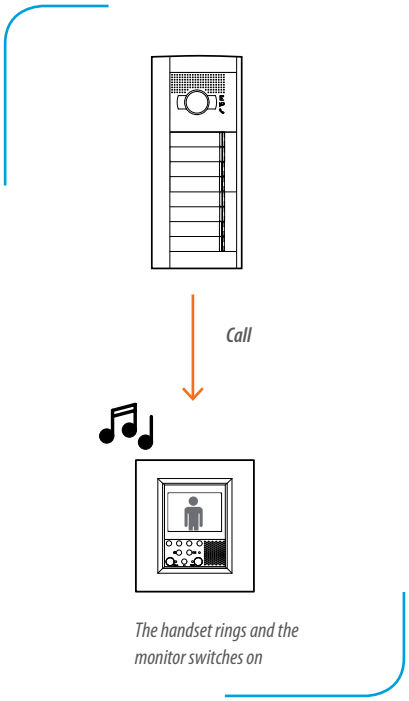


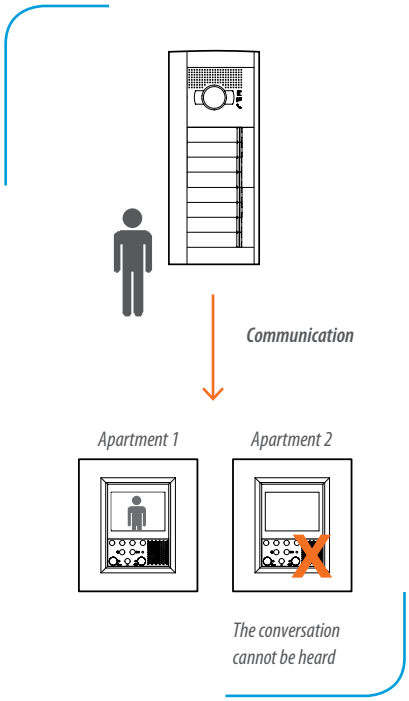
To check the configuration simply rotate the piece

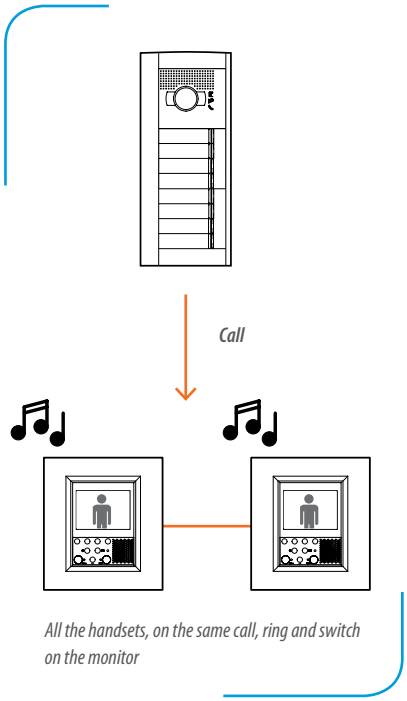
The more recent devices, specifically the "advanced handsets" and the SFERA NEW, SFERA ROBUR and AXOLUTE OUTDOOR entrance panels, can be configured in advanced mode using the PC connected to the devices through the USB port. The configuration and programming software, can be used to compile the configuration and program the device with a high level of customisation, allowing to:

- Flexibly create customized menus
- Customize text messages
- Access the home automation functions

System functions







THE CALL

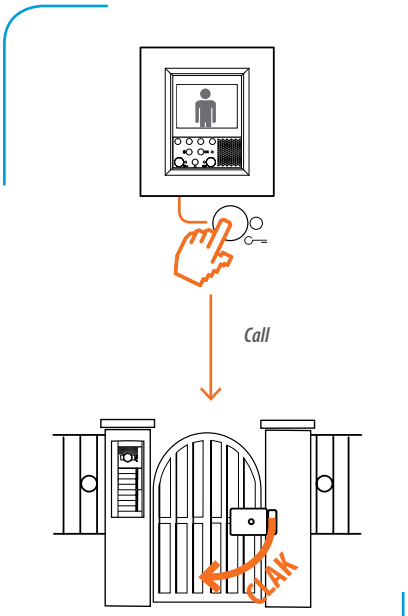
Pressing the call pushbutton on the entrance panel, the system generates a signal that is only recognised by the handsets the call is addressed to (the call will have to be answered within 30 seconds from the moment the pushbutton is pressed).
Each handset is configured in a unique specific way. When the call is received, the handset rings and the monitor switches on.
Press the pushbutton or lift the handset to establish the communication (maximum duration of the communication is 1 minute) with the entrance panel. Press again or replace the handset to stop the communication and switch the monitor off.

CONVERSATION SECRECY

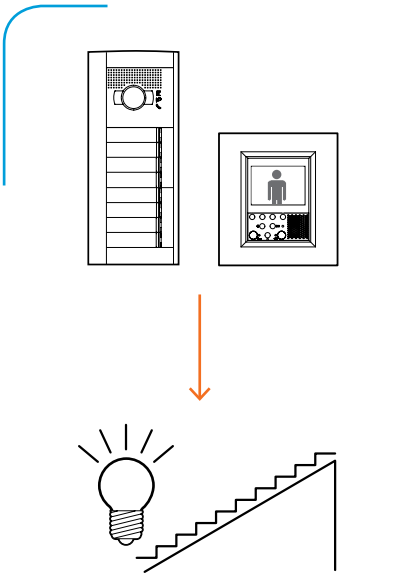
During the conversation between the entrance panel and the video handsets, all entrance panels and handsets that are not involved in the conversation are temporarily excluded in order to guarantee the privacy of video door entry conversations. When calling from an entrance panel that is temporarily excluded, a time-out tone will be heard, to indicate that the extension line is momentarily busy.

SIMULTANEOUS SWITCHING ON

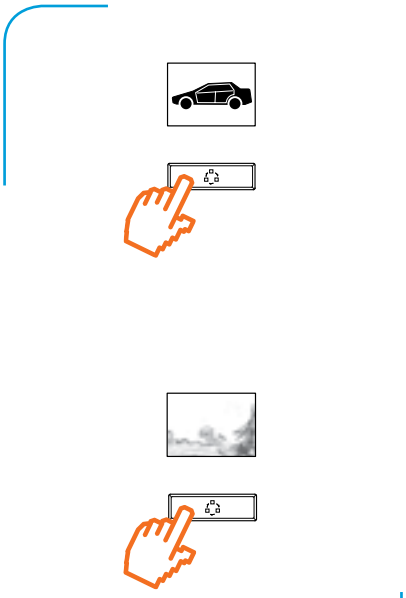
With video handsets, simultaneous switching on of the monitor is also possible: upon arrival of the call, all handsets ring and the monitors of all video handsets switch on.
When the call is answered, only the monitor of the video handset communicating with the entrance panel will remain on.
In order to set this function, all the video handsets but one must be powered locally using an additional power supply, item 346020.



Pressing the door lock key will open the gate associated with the handset



The staircase light function will switch on the system lights connected to a special actuator



Each time the self-switching on key is pressed the images displayed change.

DOOR LOCK PUSHBUTTON

The handsets are fitted with a door lock pushbutton. Pressing this pushbutton will open of one of the door locks of the system. With the system at rest, the pressure of the pushbutton will cause the opening of the door lock of the entrance panel associated with the handset during the P configuration of the handset itself. On the other hand, if the pushbutton is pressed during the call, the door lock associated to the entrance panel making the call will be opened.

THE STAIRCASE LIGHT FUNCTION

Handsets are equipped with a pushbutton or an icons menu that controls the staircase light function. This function activates a relay for the timed switching on of lights and the opening of the gate.
The function can be performed by installing the actuator item 346200, appropriately configured.

SELF-SWITCHING ON PUSHBUTTON

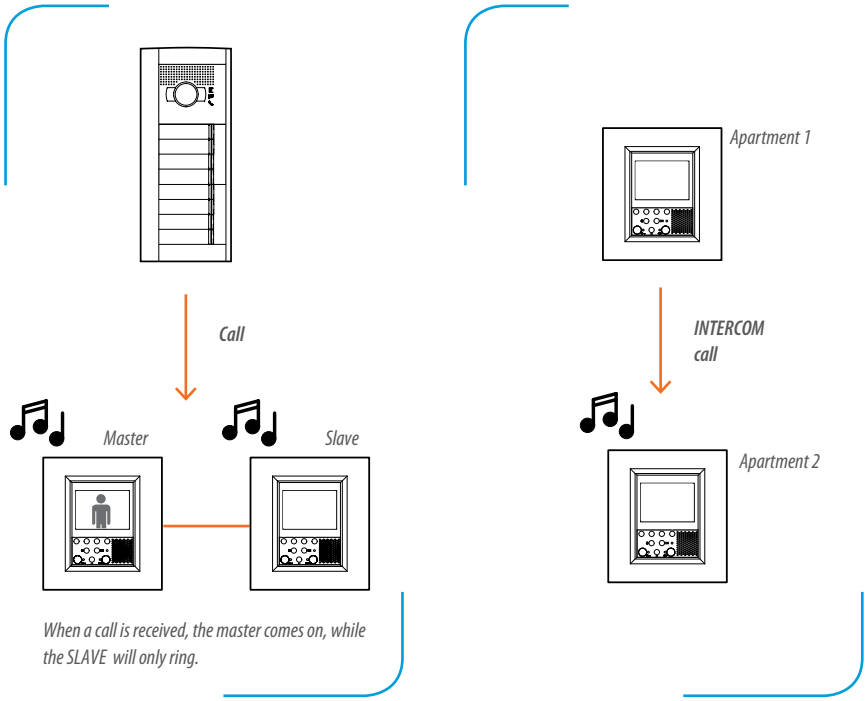
By pressing the self-switching on pushbutton while the videohandset is at rest, a connection will be established with the entrance panel associated with the handset during the P configuration of the handset itself. Pressing repeatedly on the self-switching on pushbutton, will scroll through the various entrance panels and the cameras connected to the system.

Video Display Etèris

Polyx Video

Basic SWING

System functions



MASTER-SLAVE FUNCTION

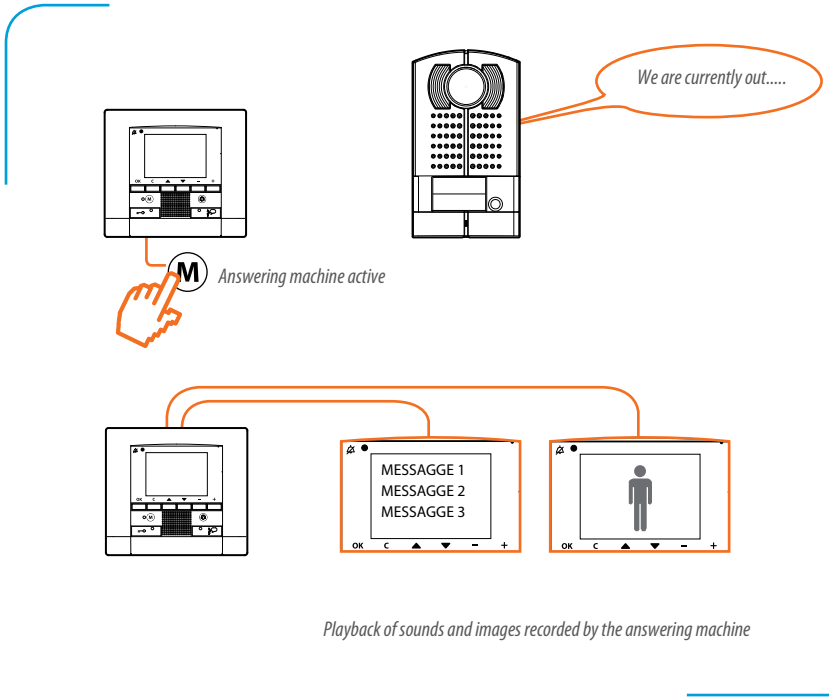
The system offers the MASTER-SLAVE function: when the call is received, all the apartment handsets ring, but only the monitor of the video handset configured as master comes on. When the auto-switching on key of a SLAVE is pressed, the monitor of the MASTER handset turns off, while the monitor of the SLAVE itself turns on (without necessarily establishing communication with the entrance panel). If the connection key of a SLAVE is pressed (or lifting the handset), the MASTER monitor turns off and communication with the audio-video entrance panel is established.

INTERCOM

The system offers an intercom function, with up to 3 minutes communications between videohandsets:

- From different apartments
- Within the same apartment

If the apartment has an apartment interface - item 346850 - or is a one- family apartment, each videohandset of the apartment can be called individually. The INTERCOM connection can be established at the same time as other external connections. The INTERCOM connection can be simultaneous to other connections external to the apartment. If the apartment does not have an apartment interface - item 346850 - any apartment handset can call all other apartment handsets. The INTERCOM connection will not occur at the same time as external connections. Any call received by an EP, even to any other apartment, will terminate the INTERCOM connection.



Playback of sounds and images recorded by the answering machine

VIDEO DOOR ENTRY SYSTEM ANSWERING MACHINE FUNCTION

Function available only using the POLYX MEMORY DISPLAY video handset, item 344163. It is possible to record voice and images of a call from an entrance panel.

It is also possible to record an audio message to play back on the entrance panel following an unanswered call.

The video door entry system message can be recorded in 2 ways:

- STILLS: the message includes a picture of the visitor and the recorded audio message (160 messages max).
- VIDEOS: the message includes a video feed (duration 16 seconds) and the recorded audio message (18 messages max).

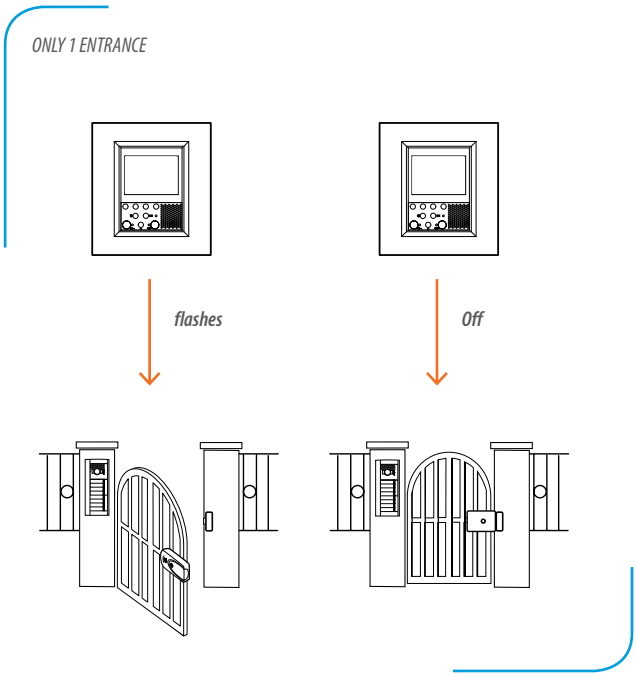
  Each message will be given a progressive number, which will be displayed on the video handset, together with the date and time information.

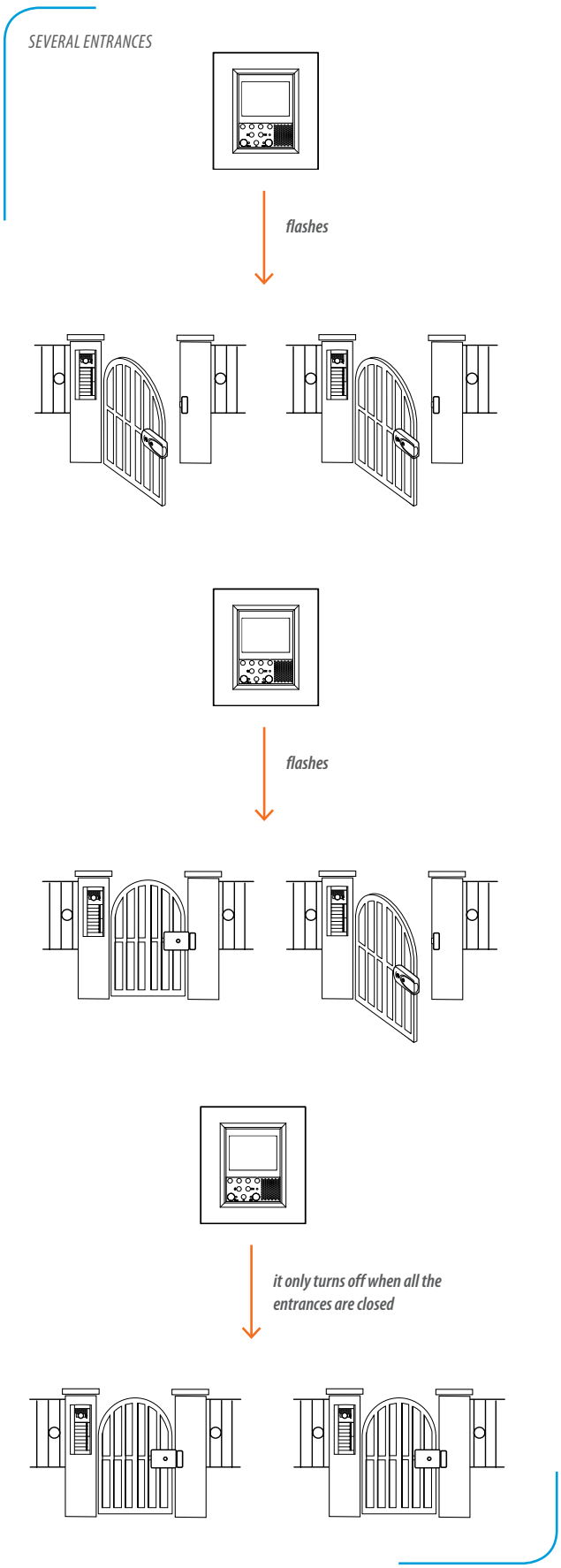
SFERA Robur entrance panel

Linea 2000 Metal entrance panel

Polyx Memory Display video handset

System functions





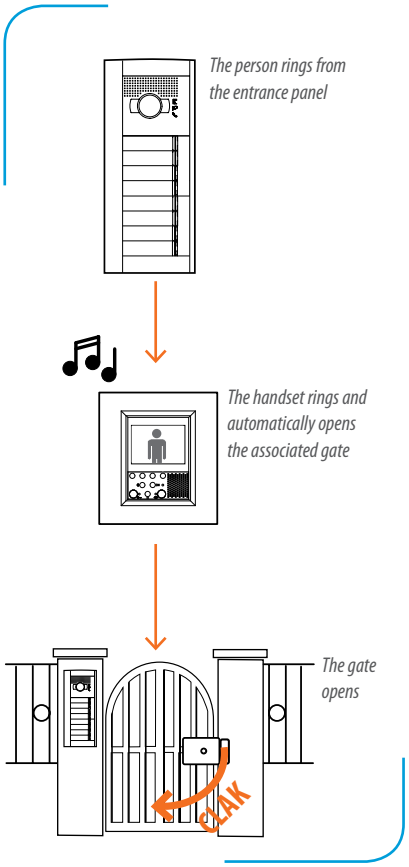
DOOR STATUS FUNCTION

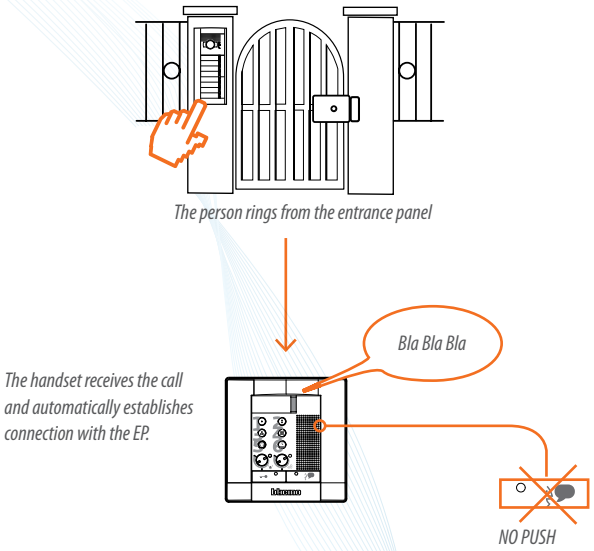
By using the handsets fitted with LED, the door lock actuator item 346230 or 346260 and the CISA ELETTRIKA door lock (with the accessory item 346240), the status of doors and gates can be controlled.

When the gate is open, the red LED will flash. When the gate is closed, the LED is off.

If 2 or more entrances are associated, the LED will be off when all entrances are closed and will flash when at least one entrance is open.

The DOOR STATUS FUNCTION and the OFFICE FUNCTION cannot be activated at the same time.





OFFICE FUNCTION

This function is used mainly in the service sector (offices, doctors, professional) and in all those situations, where the opening of the gate or entrance door without physical interaction with the handset is necessary.
When someone calls from the entrance panel, the handset will ring and the associated gate will open automatically (door lock), without the need for someone to press the door lock key on the handset itself.

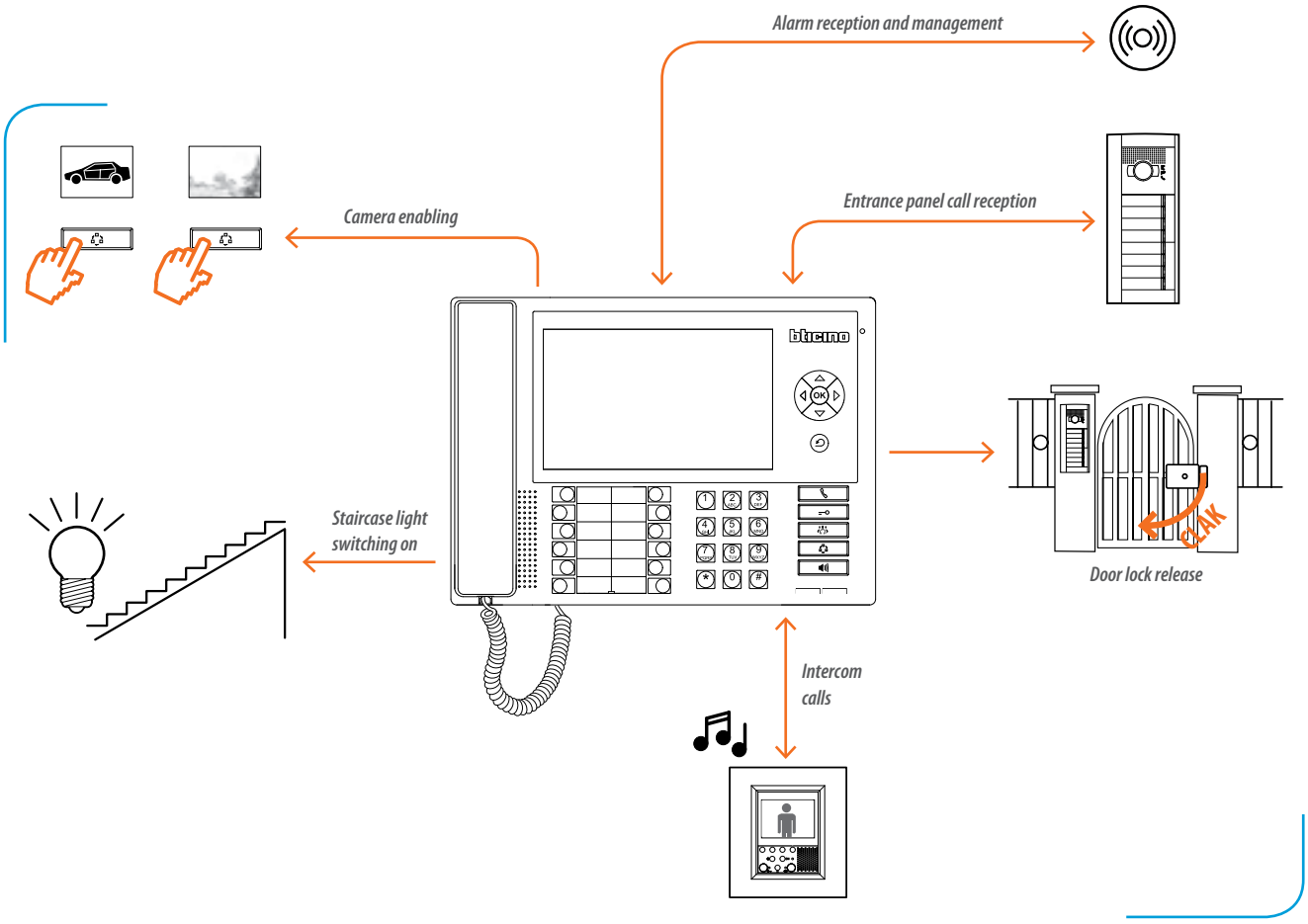
When the function is activated, the video handset red LED will also flash.
The OFFICE function and the DOOR STATUS function cannot be activated at the same time.

"HANDSFREE" FUNCTION

So-called because it provides automatic activation in case of call. It is therefore possible to answer an incoming call without pressing the connection key (connection is automatically established when the call is received).

The "handsfree" function can only be activated on one device of the individual apartment at the time (preset handsfree handset/video handset).

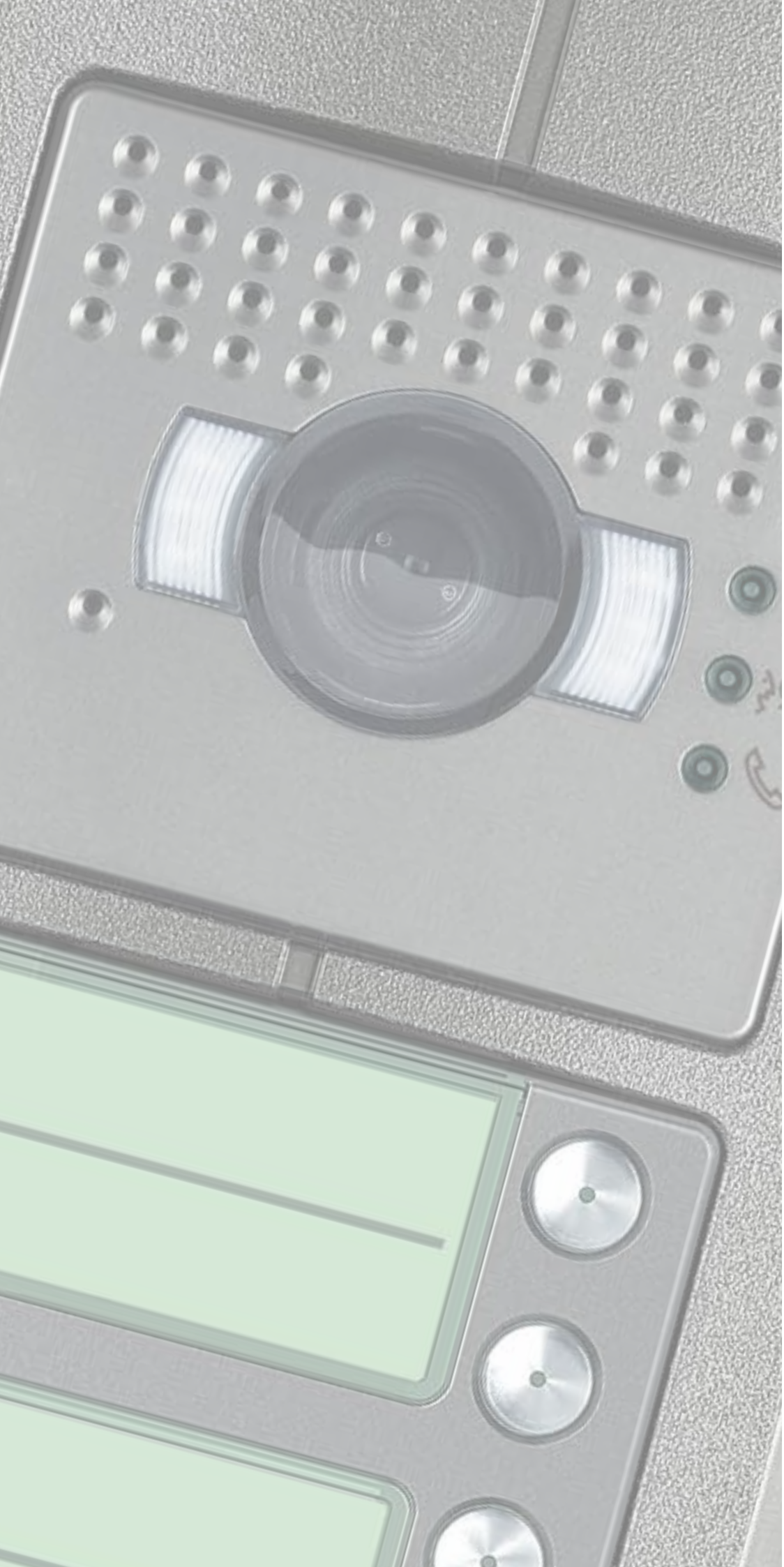
System functions



2 WIRE SWITCHBOARD

Available for multi-family installations, the 2 WIRE switchboard can be used for central management and supervision of the various apartment complex video door entry system services. Using this device it is possible to communicate with the apartment, manage the door lock, switch the staircase lights on, monitor the cameras connected to the common areas of the system, and monitor any alarms from apartments or common areas. It has a customisable address book for handsets, entrance panels, and any other switchboards connected (max. 16).

Note: when configuring SFERA NEW and SFERA ROBUR entrance panels using the TiSferaDesign software, it is possible to make a direct call from the 2 wire switchboard.



GENERAL RULES FOR INSTALLATION

System layout

GENERAL FEATURES

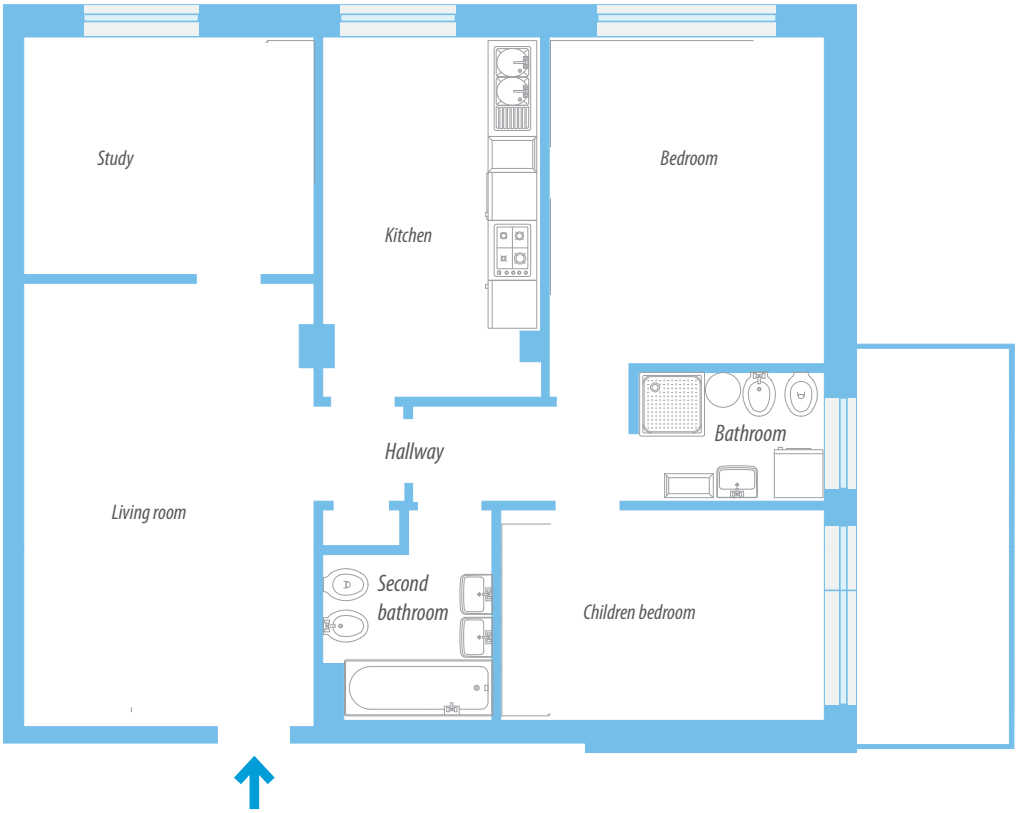
The first step towards the installation of a system is to design and ensure a good basic installation setup.
In fact, an accurate setup of cables, trunking, boxes, equipment rooms and control points, gives the possibility of better following the evolution of devices already installed inside the home, and to connect new devices/expand the system.

Irrespective of the type of system and the required home automation applications, it is necessary that the **layout of the house** and a **general furniture plan**, are made available to the installer.
It is also important to check the accuracy of the details of the estimate in relation to the actual site.

In creating a system it will be necessary to take into account other factors based on the installation features of a "BUS" system:

- The layout of the conduits;
- The type of wiring;
- The coexistence of cables inside the same conduit.

Note: having the home layout is of primary importance for the correct design and setup of the system.



Selection and positioning of the electric distribution board

The layout of the electric systems within the building entails the need for grouping in one central point all the active (power supplies, interfaces, telephone switchboards, etc.) or passive devices for the control and the management of all the functions.
The size of this location shall be defined taking into account the following general requirements:

- allow for extra space for expansion using new devices that may be needed for future requirements.
- install the power supplies in the lower position of the switchboard in order to facilitate thermal dissipation;
- the switchboard must be capable of dissipating a power higher than the sum of the powers dissipated by all the devices it will hose.

BTicino offers a wide range of switchboards suitable for types of needs, with different capacities and installation solutions (flush mounted, or wall mounted).
A useful selection criteria in terms of installation of the MY HOME system is the following:

- for **one-floor or multi-floor installations in new or existing (refurbished) buildings** where an equipment room will be installed for the electric distribution board of the home, it is possible to select among the various wall mounted or flush mounted distribution board or switchboard solutions belonging to the Multiboard and Idroboard series for the integration of the MY HOME system. For the calculation of the dissipated power, all BTicino switchboards and distribution boards meet the requirements of CEI 23-51 standards.

Wall mounted and flush mounted switchboards

For **installation in one floor new buildings and apartments** where an equipment room for the integration of the MY HOME system is not available, BTicino offers MY HOME FLATWALL, an innovative solution for central installation of electric and electronic devices and user interfaces in full respect of the decor of the home.
This type of unit can contain up to 288 DIN modules, and features sections that can only be accessed by the installer (e.g. actuators and power supplies, for maintenance/updating purposes), as well as sections that can be accessed by the final user (burglar-alarm central unit, flush mounted video handset, etc.):
MY HOME FLATWALL meets two types of installation requirements:

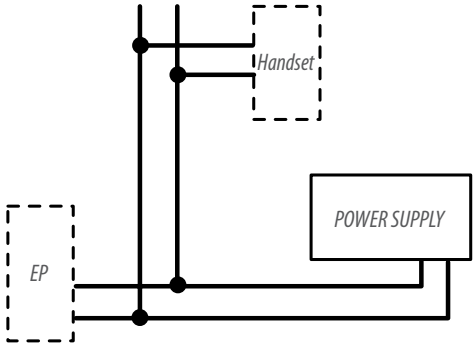
- inside the homes, as innovative centralised installation solution for all electric and multimedia services in harmony with the decor of the home.
- on the building riser, as a solution for the distribution of the main wiring of the whole building.

MY HOME Flatwall

The wiring - Audio and video systems

2 WIRE AUDIO SYSTEMS

2 WIRE audio systems are installed by shunting the 2 WIRE bus to connect handsets and entrance panels.
The devices can be connected to any point of the system. For the connection of the devices it is not necessary to use twisted cables.

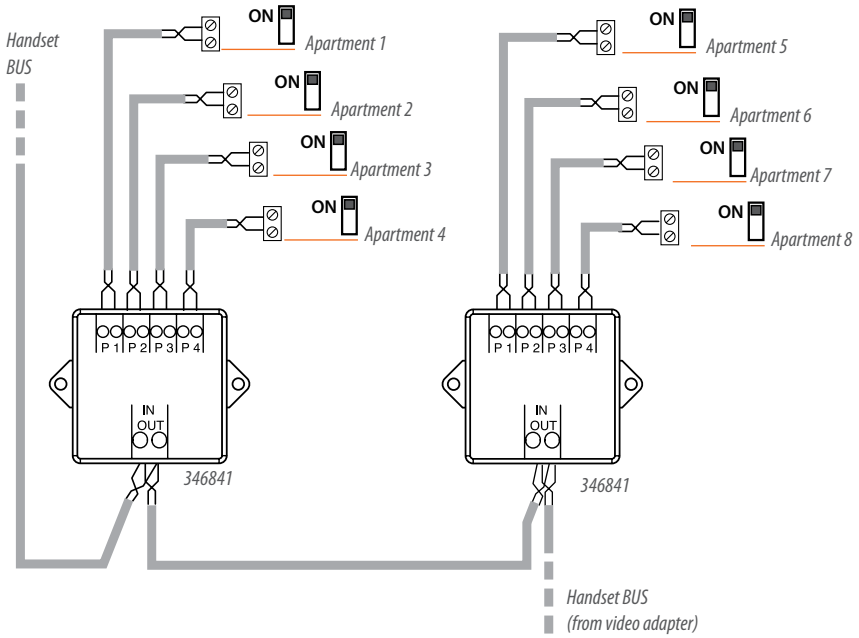


Audio system connection mode

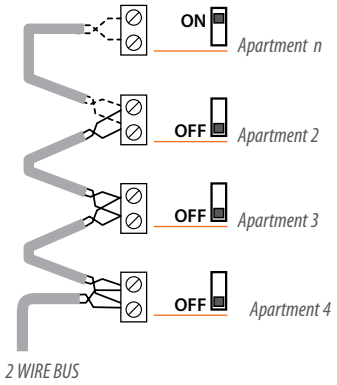
VIDEO SYSTEMS

2 WIRE video systems must be fitted mainly using a star wiring procedure, using the 346841 floor shunt.
In alternative, it is also possible to install an in-out or mixed wire system.

STAR wiring (recommended)



IN-OUT wiring



The wiring - Video systems

STAR WIRING

The star wiring is made connecting the individual apartment to an output of the floor shunt, item 346841.

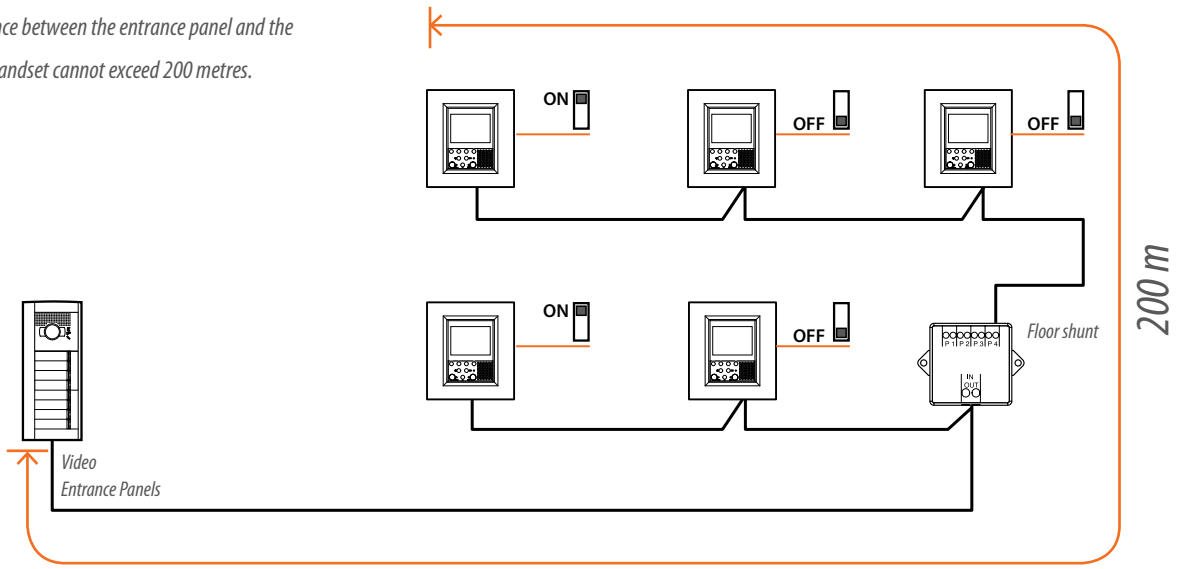
Each line must be terminated by positioning the micro switch of the last appliance to ON.
STAR wiring is particularly suitable for multi-family systems, when more than one living unit on the same floor or in multi-family systems, where max. distance between the entrance panel and all handsets is needed.
On each output of the shunt it will be possible to connect up to 3 handsets maximum.

An output of the floor shunt must be dedicated to each handset with simultaneous switching on or table-top base installation.

IN-OUT WIRING

IN-OUT wiring is connected directly on the terminal of the appliances which are connected to the system.
Each riser must be terminated by positioning the micro switch of the last handset to ON.
IN-OUT wiring is particularly indicated for one and two-family systems and for vertical or horizontal multi-family systems (with the homes in rows).

The distance between the entrance panel and the furthest handset cannot exceed 200 metres.

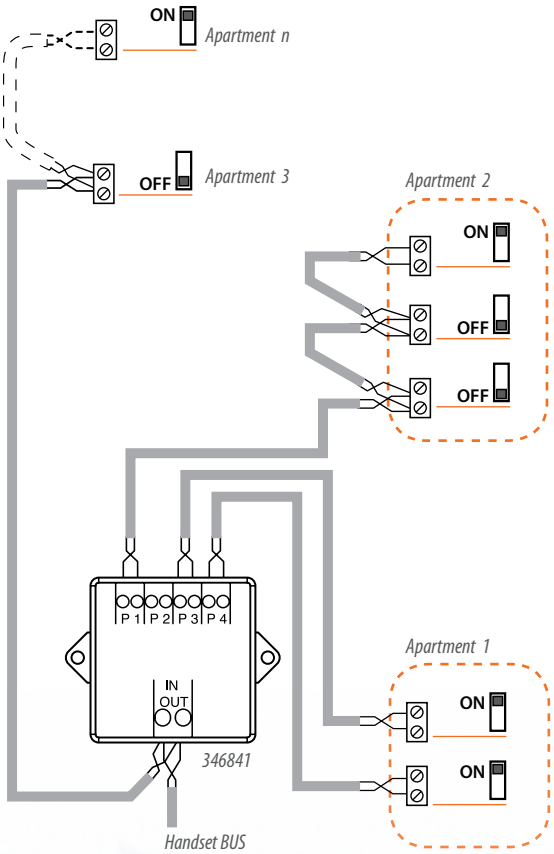


The wiring - Video systems

COMBINED WIRING

Both wiring methods described previously can be used together, for the realization of more articulated systems.
The combined wiring (IN-OUT and Star) allows to execute wiring systems in order to satisfy the greatest quantity of requests.
Floor distribution blocks outputs can be used to connect a single device or to generate an apartment line (on which max. 3 devices can be connected, without using the apartment interface item 346850).
To the BUS handset can be connected in IN-OUT floor distribution blocks or handsets.

The assignation of the handsets to the apartments occurs through configuration.



The cable

The white BUS-SCS cable, item 336904, purposely designed and produced for the installation of SCS Video Door Entry Systems and Sound Systems. However, it is also suitable for use in Automation, Temperature Control, and Burglar-Alarm SCS Systems. This cable is used for the distribution of the power supplies and the operating signals to all BUS system devices.

The cable consists of a white external cable sheath and two twisted flexible conductors (section of 0.5 mm^2), one brown and one brown/white. It is sold in 200 m coils.

It is therefore suitable for use:

- In open air installations, inside trunking, cable trays, and piping
- Inside walls, using suitable piping
- In the ground, using suitable piping.

INSTALLATION TOGETHER WITH OTHER CABLES

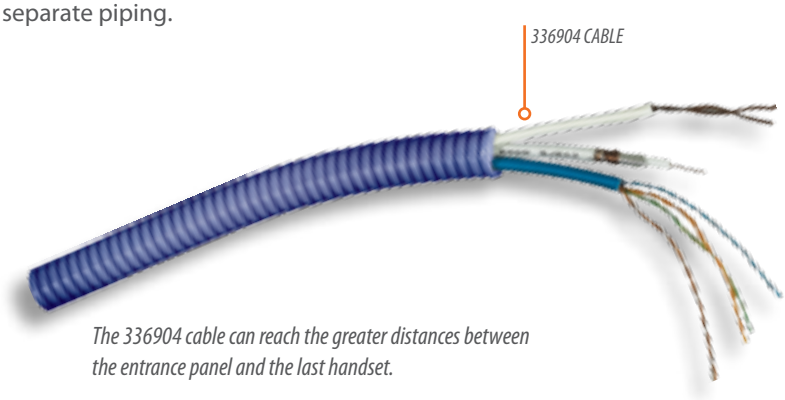
Although the construction of the cable guarantees the necessary electrical insulation level for installation together with 450/750 V system cables, it is however not capable of guaranteeing immunity from any electromagnetic disturbances that may occur when installed in the same conduits as those used for the power supply cables.

It is therefore strongly recommended that the BUS/SCS cable and the power supply cables are installed in separate piping.

UNDERGROUND CABLE INSTALLATION

The 336904 BUS SCS cable can be installed underground (protected using appropriate piping), together with other signalling cables, provided the voltage is <50 V.

It is strictly forbidden to install the 336904 cable in the same conduit as power supply cables with voltages >50 V. Failure to comply with the installation requirements will relieve BTicino of all responsibilities for the operation of the system installed.



The 336904 cable can reach the greater distances between the entrance panel and the last handset.

CABLES TO BE USED

	Type of cable	Item	Can be buried	Audio systems	Video systems*
	**BTicino twisted cable, Sect. 0.50 mm^2**	**336904**	**YES**	**Recommended**	**Recommended**
	BTicino twisted cable, Sect. 0.35 mm^2	L4669	NO	Usable	Usable
	Twisted telephone pair, Sect. 0.28 mm^2 < 1 mm^2		NO	Usable	Usable
	Sheathed not twisted normal cables, Sect. ≥ 0.28 mm^2 < 1 mm^2		NO	Usable	Usable
	Sheathed not twisted normal cables, Sect. = 1 mm^2		NO	Usable	Usable
	BTicino UTP5 cable	0327 51	NO	Usable	Usable
	UTP5 multipair cable		NO	Usable	Usable

NOTE (*): the distance entrance panel - furthest away handset depends on the type of the cable used.

Installation of entrance panels

HEIGHT OF THE ENTRANCE PANEL

When installing the Entrance Panel, it is recommended that the pushbutton panel is installed at a height of 160 – 165 cm (top edge).

The camera must not be installed in front of light sources, or in places where the subject being filmed is in the shadow.

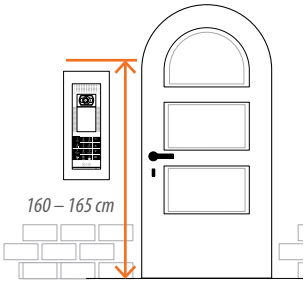
If this condition cannot be respected, the picture will not have much contrast in the darker areas. This is because the brightness is self-regulated on the lighter part of the picture.

To solve these problems change the camera installation height, normally 160 – 165 cm, to a height of 180 cm and direct the lens downwards to improve the quality of the shots.

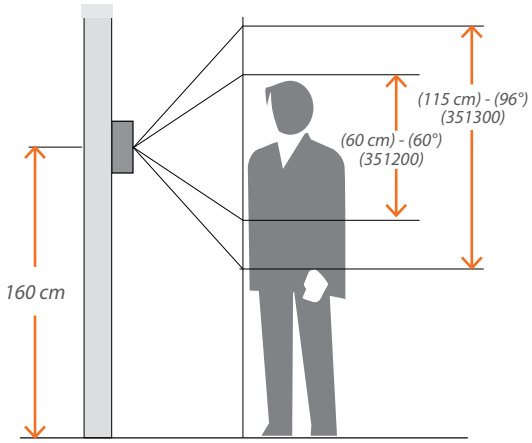
In scarcely lit areas, the installation of an additional light source is recommended.

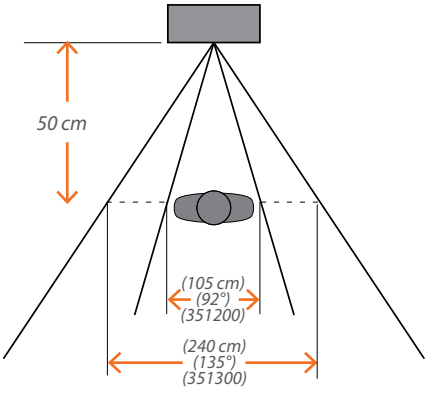
Note: In order to enable disabled people to use outdoor pushbutton panels, we recommend an installation height of 120-125 cm (top edge) - ref. (DM 236/89).

Recommended installation heights, unless otherwise required by local regulations.



The use of SFERA NEW and SFERA ROBUR modules with wide angle cameras gives the possibility of expanding the shooting field as indicated below:

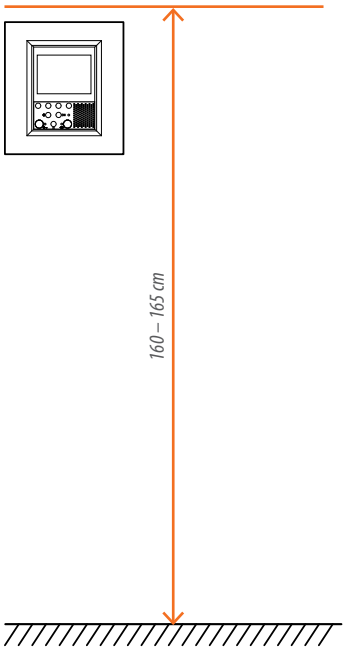




Installation of handsets and DIN devices

HEIGHT OF THE HANDSET

When installing the handsets, including standard or video handsets, it is recommended that the devices are positioned at a height of 160 – 165 cm (top edge).

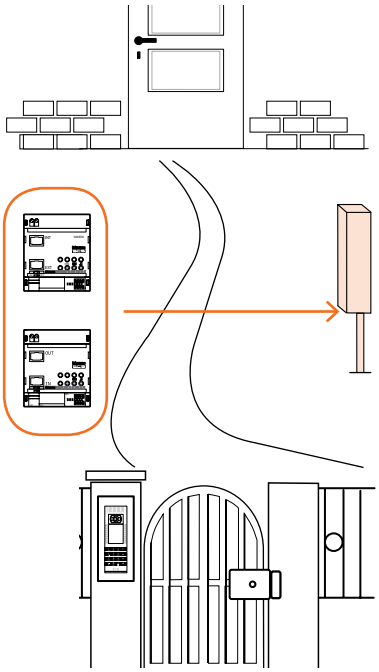


Note: In order to enable disabled people to use handsets/video handsets, we recommend an installation height of 120-125 cm (top edge) - ref. (DM 236/89)

Recommended installation heights, unless otherwise required by local regulations.

DIN DEVICES

The interfaces and the DIN rail devices cannot be installed in a manhole. For their installation, a sealed electric cabin with DIN rail must be used (DIN switchboard).



Configuration

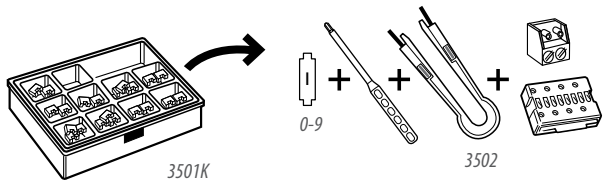
To configure means to program the system. This occurs assigning an identification and operational mode number to the devices.
This operation is made inserting in the appropriate seats some configurators (numbered from 0 to 9), using a clamp (3502) provided with the power supply or contained in the case of the configurators **or using the configuration software (recommended)**.

A seat is left empty corresponds to the configuration of a zero.

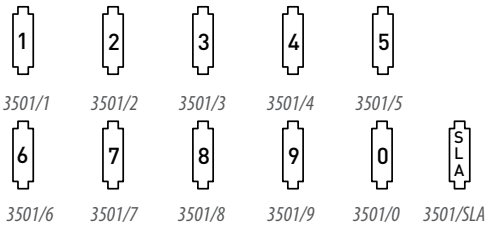
In the system exist two different numerations to identify respectively the entrance panels (EP) and the handsets.
The numeration of the EP (0-96) is generally identified by P, while the address of the handsets (0-99) is identified by N.
On the EP, in addition to the P address it is necessary to configure also the N address relating to the handset from which we would start to call.
On the handsets in addition to the N address, it is necessary to configure in P the EP associated to the same handset, or the entrance panel on which the door lock and auto-switching ON controls work when the handset is switched OFF.

Should occur the need to modify the configuration of a device, it is necessary, in addition to change the configurators, take off the power supply to the whole system, wait 1 minute, and then provide voltage again. For each device exist also particular configurations which will be detailed in the product technical sheet.

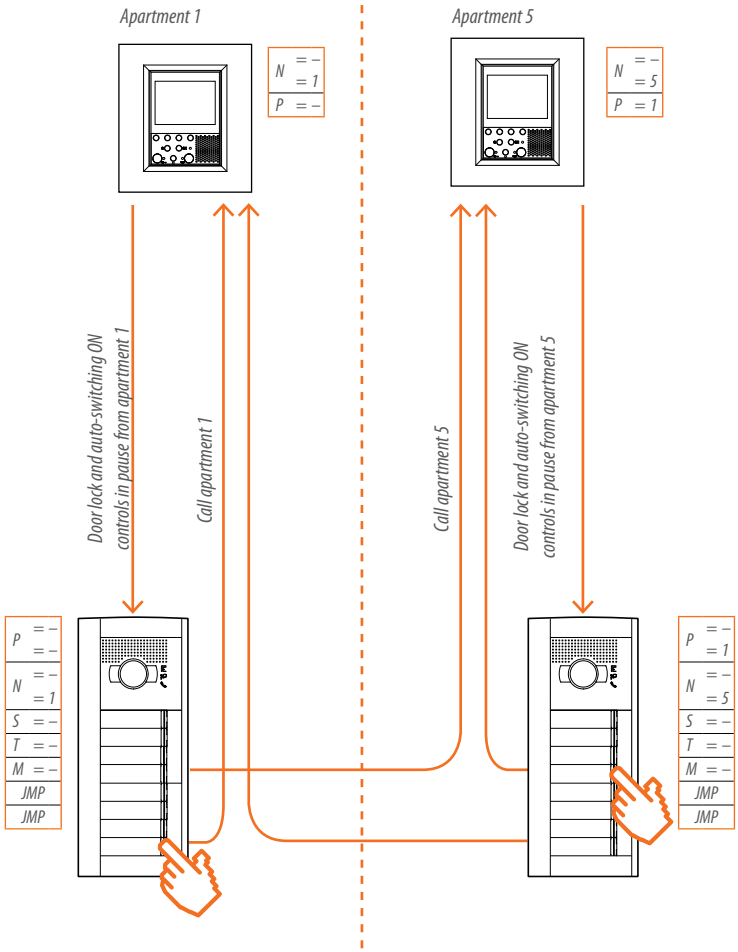
The configurators can be purchased in a case



or individually



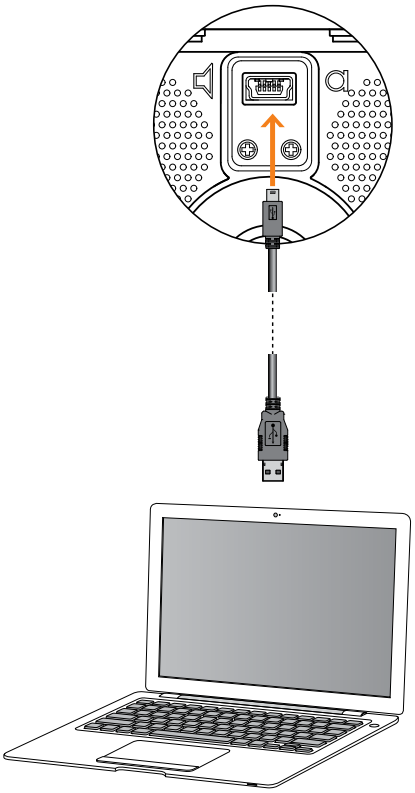
Example of configured system and its operation



Advanced configuration of devices

SFERA NEW, SFERA ROBUR, and AXOLUTE OUTDOOR entrance panels and advanced video handsets can be configured in advanced mode using the PC and specific configuration software programs.
The advanced configuration offers a high degree of device configuration as far as: flexible menu composition, text customisation, and access to home automation functions.

For PC connection use a standard USB-miniUSB cable.
The software gives the possibility of configuring, and programming the device, and of updating its firmware.
SFERA NEW and SFERA ROBUR entrance panels have a front miniUSB connection, so that all operations may be performed without removing the pushbutton panel.



EXAMPLE OF CONFIGURATION SOFTWARE SCREENS

TiSferaDesign

TiAxoluteNighterAndWhice

Configuration

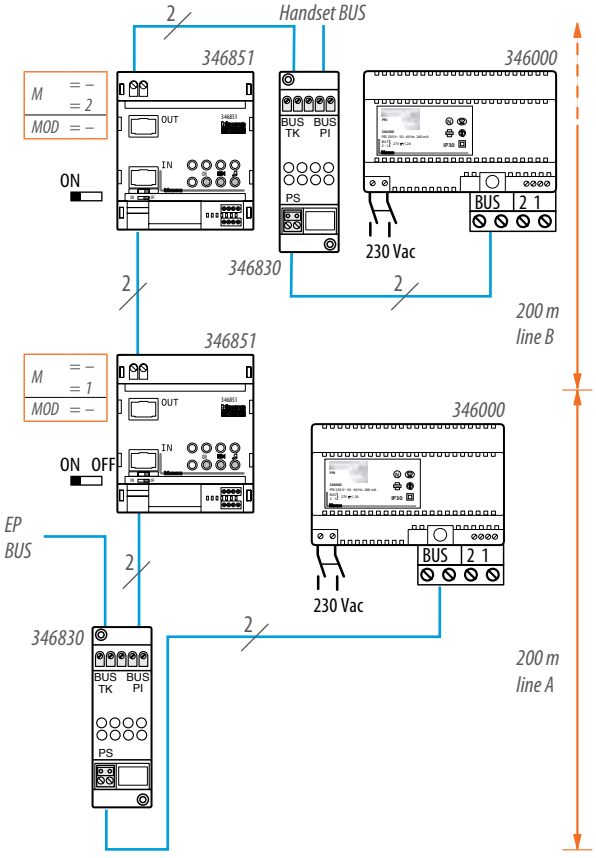
SYSTEM EXPANSION MODULE 346851

The configurator connected to the MOD socket of the interface defines its operating mode as follows:

- **MOD = 0** (no configurator connected) - **GALVANIC SEPARATION MODE**
- **MOD = 2 - ENTRANCE PANEL LINE EXPANSION MODE**
- **MOD = 5 - INDEPENDENT RISERS MODE**
- **MOD = 6 - EXTENDED RISER MODE**
- **MOD = 7 - EXTENDED RISER EXPANSION MODE**

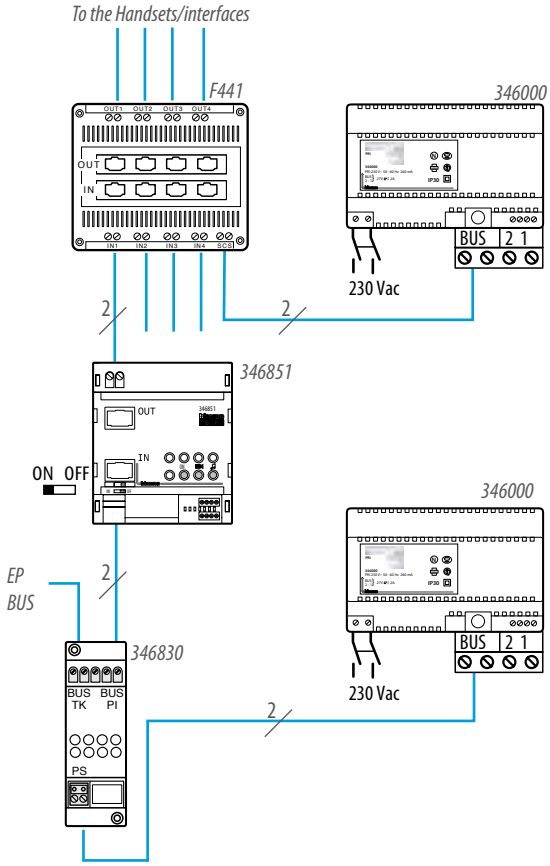
MOD = 0 (GALVANIC SEPARATION)

This configuration mode is used to double the line length or to increase the system performance - see the following example:



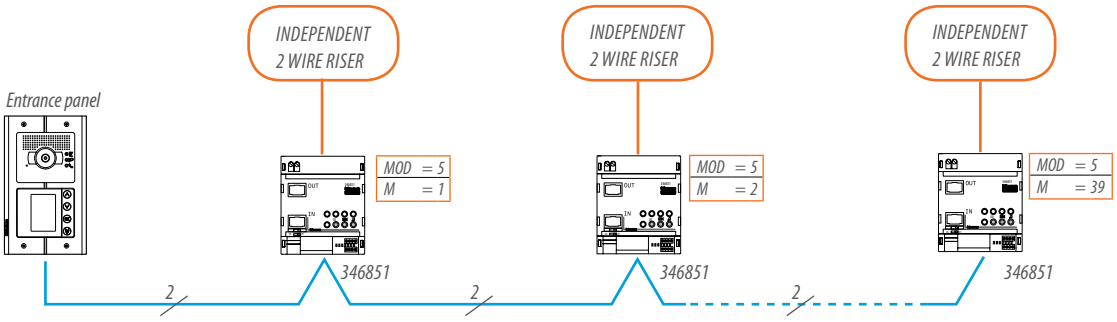
MOD = 2 (ENTRANCE PANEL LINE EXPANSION MODE)

This mode is used for installation with interface connection between the entrance panel and the audio/video node F441, to expand the entrance panel line - see the following example:



MOD= 5 for independent audio risers

M = specific progressive number indicating the riser number.



For the common entrance panel, the handsets have address M (riser number) x 100 + N (handset for the riser).

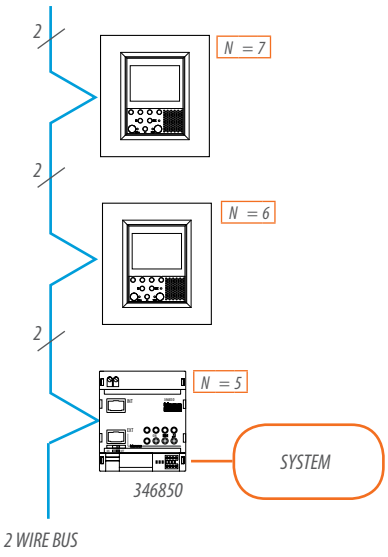
Ex. Handset N = 20 of the riser 12 for the common EP = 12 x 100 + 20 = 1220

APARTMENT INTERFACE, Item 346850

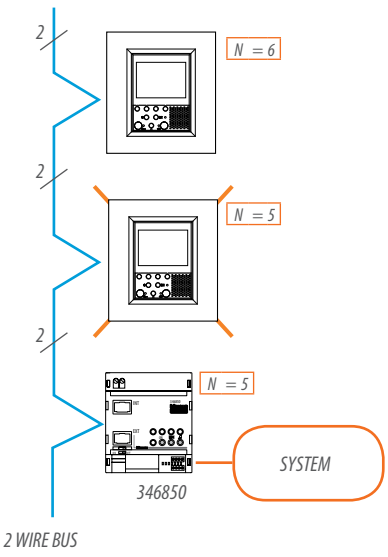
The apartment interface is configured as a normal handset. The interface must be configured in a specific unique way. No other handset can be configured in N using the same address, in the same system or on the same riser with independent audio. The factory device is configured with M = 3.

The device configuration is dealt with in details in the technical sheet.

Correct configuration



Wrong configuration



General limits

These are the maximum limits which can be reached by a 2 wire system using apartment interfaces item 346850 and system expansion modules item 346851.

SYSTEM MAXIMUM LIMITS			
96	*main video entrance panel*	**15**	*entrance panels or cameras for each apartament (16 in the one-family)*
39	*independent audio riser*	**3**	*handsets for each apartment*
100	*audio handsets for each riser (without 346851)*	**5**	*handsets for each apartment (with interface 346850)*
3900	*apartments (100 interfaces 346850 for each riser)*	**20**	*handsets for each apartment (with interface 346850 + system expansion modules 346851)*

Handsets are classed as belonging to 3 different types, as listed below:

"BASIC" HANDSET:

- Basic Swing video handset 344832

Swing video handset

"ADVANCED" handsets:

Handsfree video with icon menu for the management of the MY HOME automation functions

- Axolute Nighter/Whice Video Station 349320 - 349321
- Axolute Video Station 349310
- Axolute Video Display 349311 - 349312 - 349313

Axolute Video Display

Axolute Etèris Video Display

"TRADITIONAL" handsets:

- Sprint audio handsets 344202 - 344212
- SPRINT L2 audio handset 344242
- Swing 344704
- Swing video handsets 344804 - 344824
- Pivot audio handset 344032

Pivot video handset

Polyx video handset

- Axolute Etèris Video Display 349340
- LivingLight Video Display 344400/344401
- Polyx Memory Display 344163

Polyx Memory Display

- Pivot video handsets 344102 - 344122
- Polyx audio handset 344032
- Polyx video handset 344192

Swing audio handset

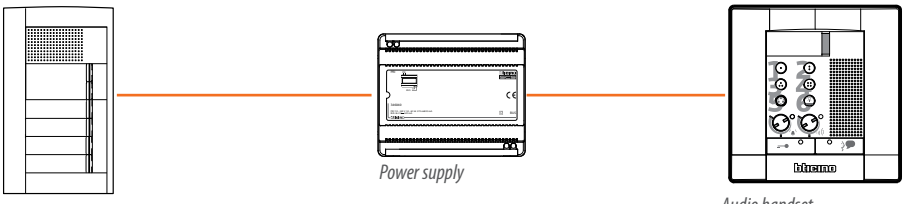
SPRINT L2 handset

Axolute Video Station Nighter

Axolute Video Station

Possible systems

AUDIO SYSTEM WITH POWER SUPPLY 346040



Audio entrance panel

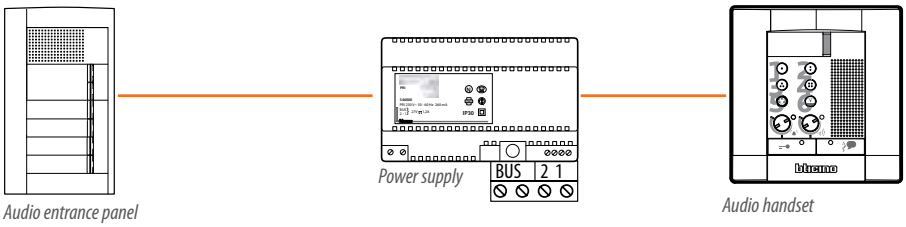
Power supply

Audio handset

MAX 56 HANDSETS

- Max. 3 handsets, bells or/and melodic bells for each apartment.

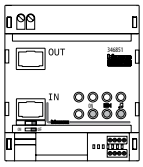
AUDIO SYSTEM WITH POWER SUPPLY 346000



Audio entrance panel

Power supply

Audio handset



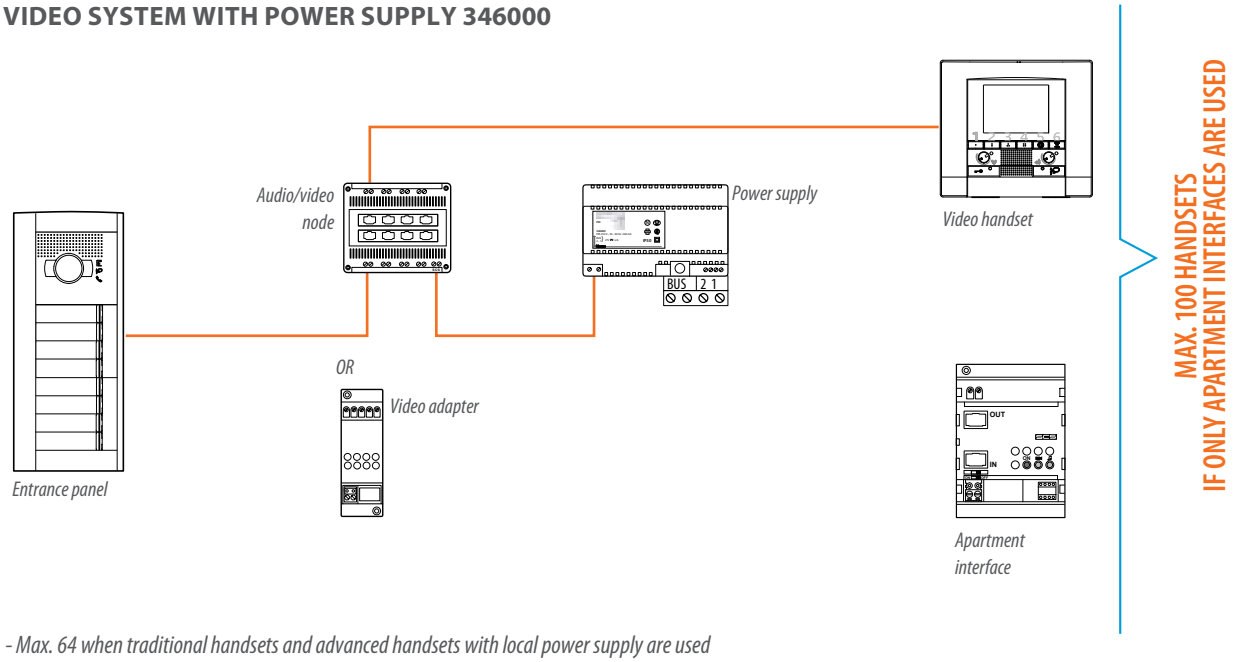
Apartment interface

MAX. 100 HANDSETS
OR APARTMENT INTERFACES

1. *Max. 3 handsets, bells and/or melodic bells for each apartment*
2. *Max. 5 handsets, bells and/or melodic bells for each apartment (single family)*
3. *Max. 5 handsets, bells and/or melodic bells for each apartment (with 346850 apartment interface)*

Possible systems

VIDEO SYSTEM WITH POWER SUPPLY 346000



- Max. 64 when traditional handsets and advanced handsets with local power supply are used

- Max. 50 if at least an advanced handset NOT in local supply is used

- Max. 3 handsets, bells or/and melodic bells for each apartment (max. 5 in one-family system)

- Max. 3 handsets, bells or/and melodic bells for each apartment interface

For the calculation of the size of the system including interfaces item 346850 and 346851, separate the galvanically insulated system. The following tables should be applied for each galvanically insulated system. In doing so, during the first approximation, the interfaces 386850 and 346851 should be treated as an EP for the part connected to the TK BUS of the video adapter 346830 or to IN of the audio/video node F441, and as a handset for the part connected to the HANDSET BUS of the video adapter or to OUT of the audio/video node.

It is recommended that the YouDiagram software is always used to check the suitability of the installations and to calculate absorptions.

The number of handsets varies depending on the number of the entrance panels and the actuators existing in the system.

In the calculation of the handsets which can be connected, we must consider also any device (audio handsets, video handsets, bells and melodic bells) connected in parallel.

AUDIO SYSTEMS EXAMPLE

In an audio system with an entrance panel max. 100 handsets can be connected.

For example we can connect:

- 100 apartments with 1 handsets (or apartment interface)
- 80 apartments with 1 handsets (or apartment interface) and 10 with 2 handsets (80+(10x2)=100)
- 71 apartments with 1 handsets (or apartment interface), 10 with 2 handsets, 2 with 3 handsets and 1 actuator for generic loads. (71+(10x2)+(2x3)+3=100)

VIDEO SYSTEMS EXAMPLE

In a video system with an entrance panel max. 64 handsets can be connected.

For example we can connect:

- 64 apartments with 1 handsets (or apartment interface)
- 50 apartments with 1 handsets (or apartment interface) and 7 with 2 handsets (50+(7x2)=64)
- 38 apartments with 1 handsets (or apartment interface), 10 with 2 handsets, 1 with 3 handsets and 1 actuator for generic loads. (38+(10x2)+(1x3)+3=64).

Audio systems

AUDIO SYSTEMS (with system power supply 346040)

SFERA/SFERA CLASSIC ENTRANCE PANELS WITH PUSHBUTTON MODULES, UNIVERSAL PORTER AND LINEA 100 (343100) EP

	SFERA/SFERA CLASSIC		UNIVERSAL PORTER 346991	LINEA 100 (343100)
Entrance panels	Max. no. of handsets	Max. no. of nameplate modules	Max. no. of handsets with 346991 + 346992	Max. no. of handsets
1	50	1	56	100
2	34	2	56	94
3	26	3	40	88
4	18	4	32	82
1 main + 2 sec.	32	3	48	-
1 main + 3 sec.	28	4	48	-
1 main + 4 sec.	8	5	8	-

NOTES:

- *In the systems the main entrance panels are those which can call all the handsets, while the secondary entrance panels are those which can call only a part of the handsets.*
- *In the tables the systems with "main and secondary" are WITHOUT independent audio.*
- *In the systems, the number of pushbuttons for each secondary entrance panel is calculated dividing the total number of handsets which can be installed for the total number of the secondary entrance panels.*
- *In the realization of the systems we must consider the possibility to insert other components. These latter will take off some handsets from the system.*
  - *For each additional nameplate module (besides those already mentioned) 3 handsets must be taken off*
  - *For each special control handset must be taken off*
  - *For each actuator Item 346200, for generic loads or call repeaters, 3 handsets must be taken off (if supplied locally with a power supply Item 346000 take off 1 handset)*
  - *For each actuator Item 346230, for door lock, 3 handsets must be taken off*
  - *For each floor call interface item 346833, 1 handset must be taken off*

AUDIO SYSTEMS MAX. 100 HANDSETS (with system power supply 346000)

SFERA/SFERA CLASSIC ENTRANCE PANEL WITH PUSHBUTTON MODULES, MINISFERA AND UNIVERSAL PORTER

	SFERA/SFERA CLASSIC		UNIVERSAL PORTER	MINISFERA (342702)	
Entrance panels	Max. no. of handsets	Max. no. of nameplate modules	Max. no. of handsets with 346991	Max. no. of handsets	Max. no. of additional expansion module 342704
1	100*	1	100***	100**	9
2	64*	2	64***	66	12
3	50	3	50	56	15
4	38	4	38	46	16
5	30	5	30	36	15
6	22	6	22	26	12
7	18	7	18	26	14
8	14	8	14	16	8
9	10	9	10	16	9
1 main + 2 sec.	76*	1	76	72**	12
1 main + 3 sec.	48	1	48	56	11
1 main + 4 sec.	48	1	48	56	9
2 main + 2 sec.	46	2	46	46	12
2 main + 3 sec.	42	2	42	46	11
2 main + 4 sec.	40	2	40	46	12
3 main + 2 sec.	38	3	38	36	13
3 main + 3 sec.	36	3	36	36	12
3 main + 4 sec.	32	3	32	26	10

** For systems with a number of pushbuttons > 50 (100 for Sfera New/Robur EP), it is necessary to install the digital call modules or two separate keypads;*

*** For systems with more than 6 expansion modules connected to a same EP, it is necessary to install two separate keypads. A maximum of 6 Item (342704) can be connected in cascade to the EP item 342702. In systems with over 66 handsets it will be possible to split the main EP on two different pushbutton panels. For each (342702) EP it is possible to connect in cascade maximum 6 items 342704, and a total of 100 handset on the riser.*

**** In systems with more than 56 pushbuttons, it is necessary to install two separate keypads.*

Audio systems

AUDIO SYSTEMS MAX. 100 HANDSETS (with system power supply 346000)

SFERA/SFERA CLASSIC ENTRANCE PANEL WITH DIGITAL CALL MODULES

	SFERA consists of: display (352500) + keypad (353000) SFERA classic consists of: numeric keypad (342610)		SFERA consists of: speaker module (351100) + display (352500) + keypad (353000) SFERA classic consists of: speaker module/display (342630) + keypad (342640)
Entrance panels	Max. no. of handsets	Max. no. of nameplate modules	Max. no. of handsets
1	100	9	100
2	70	12	70
3	64	18	64
4	58	24	58
5	52	25	52
6	46	30	30
7	40	28	
8	34	32	
9	28	27	
1 main + 2 sec.	76	25	66
1 main + 3 sec.	60	21	60
1 main + 4 sec.	56	17	56
2 main + 2 sec.	60	26	60
2 main + 3 sec.	54	22	54
2 main + 4 sec.	52	22	52
3 main + 2 sec.	54	29	54
3 main + 3 sec.	51	27	51
3 main + 4 sec.	48	27	48

NOTES:

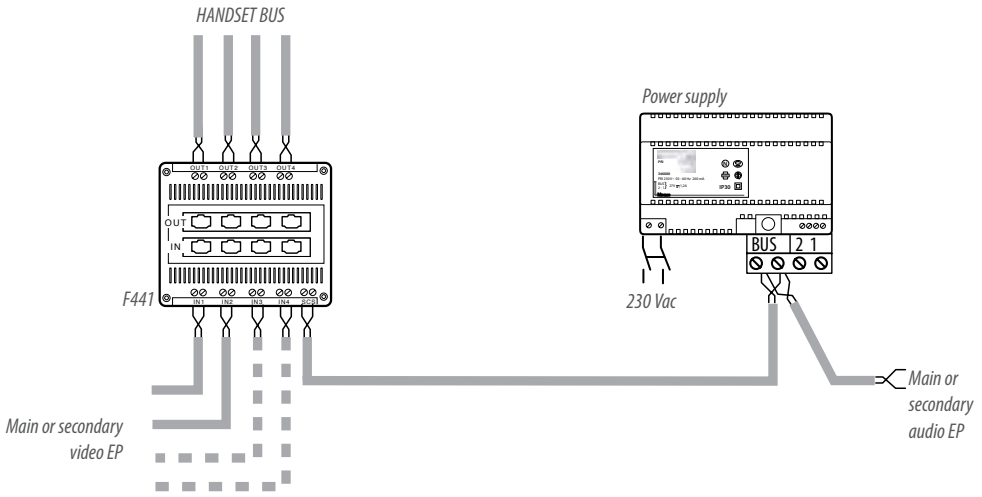
- *In the systems the main entrance panels are those which can call all the handsets, while the secondary entrance panels (with pushbuttons) are those which can call only a part of the handsets.*
- *In the tables the systems with "main and secondary" are WITHOUT independent audio.*
- *In the systems, the number of pushbuttons for each secondary entrance panel is calculated dividing the total number of handsets which can be installed for the total number of the secondary entrance panels.*
- *In the realization of the systems we must consider the possibility to insert other components. These latter will take off some handsets from the system.*
  - *For each additional nameplate module (besides those already mentioned) 3 handsets must be taken off;*
  - *For each special control handset must be taken off;*
  - *For each actuator item 346200, for generic loads or call repeaters, 3 handsets must be taken off (if supplied locally with a power supply item 346000 take off 1 handset);*
  - *For each actuator item 346230, for door lock, 3 handsets must be taken off;*
  - *For each floor call interface item 346833, 1 handset must be taken off.*

Video systems

WIRING WITH AUDIO/VIDEO NODE ITEM F441

The video systems can be realized with 2 different connections:

- with video adapter, item 346830
- with audio/video node, item F441



When using the audio/video node, up to **4 video entrance panels and 4 risers** can be installed. Audio EPs may be connected both to the SCS clamp and to the IN clamp of the audio/video node. The consumption of the devices connected to one output only (riser) of the audio/video node **MUST be <720 mA (with TRADITIONAL HANDSETS - up to 26 HANDSETS + 6 floor shunts may be connected). With ADVANCED HANDSETS - up to 17 handsets and 4 floor shunts may be connected. With ADVANCED HANDSETS items 349320 or 349321 (without local power supply), up to 6 Handsets and 2 floor shunts may be connected**.

Warning: if at least one of the installed devices is a sound system amplifier, the node output current limit is reduced to 600 mA.

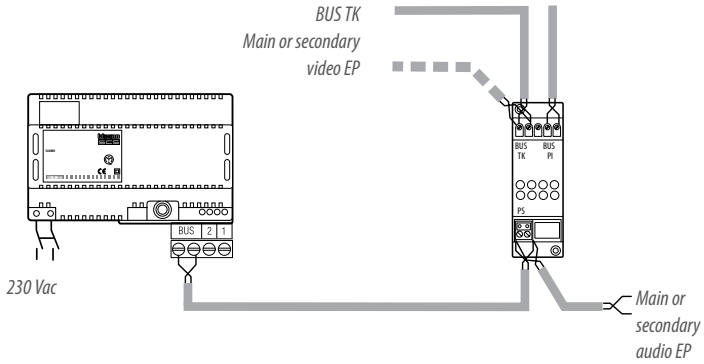
When a high number of handsets is needed on a system, additional power supplies can used for local power supply to the video entrance panels of the SFERA/SFERA CLASSIC and Axolute Outdoor range. In alternative to video EP (without local power supply) it is possible to use COAX output or native 2 WIRE outdoor cameras.

If the number of video entrance panels is >2, the audio/video node must be used.

The tables of the following pages separate black&white and colour systems only having handsets classed as "TRADITIONAL" (PIVOT, SWING, SPRINT and POLYX VIDEO) from those with at least one handset classed as "ADVANCED" (Axolute VIDEO STATION, LIVINGLIGHT VIDEO DISPLAY, Axolute VIDEO DISPLAY, Axolute Nighter/Whice VIDEO STATION and POLYX MEMORY DISPLAY).
In multi-family systems POLYX MEMORY DISPLAY, MUST ALWAYS be used with a local power supply.
To size multi-family systems with at least one Axolute Nighter&Whice VIDEO STATION HANDSET, consider the ADVANCED HANDSETS column, taking into account that 1 N&W VIDEO STATION HANDSET counts as 3 advanced HANDSETS.
Example: 7 advance HANDSETS + 1 AXOLUTE Nighter HANDSET = 10 advanced HANDSETS.

Video systems

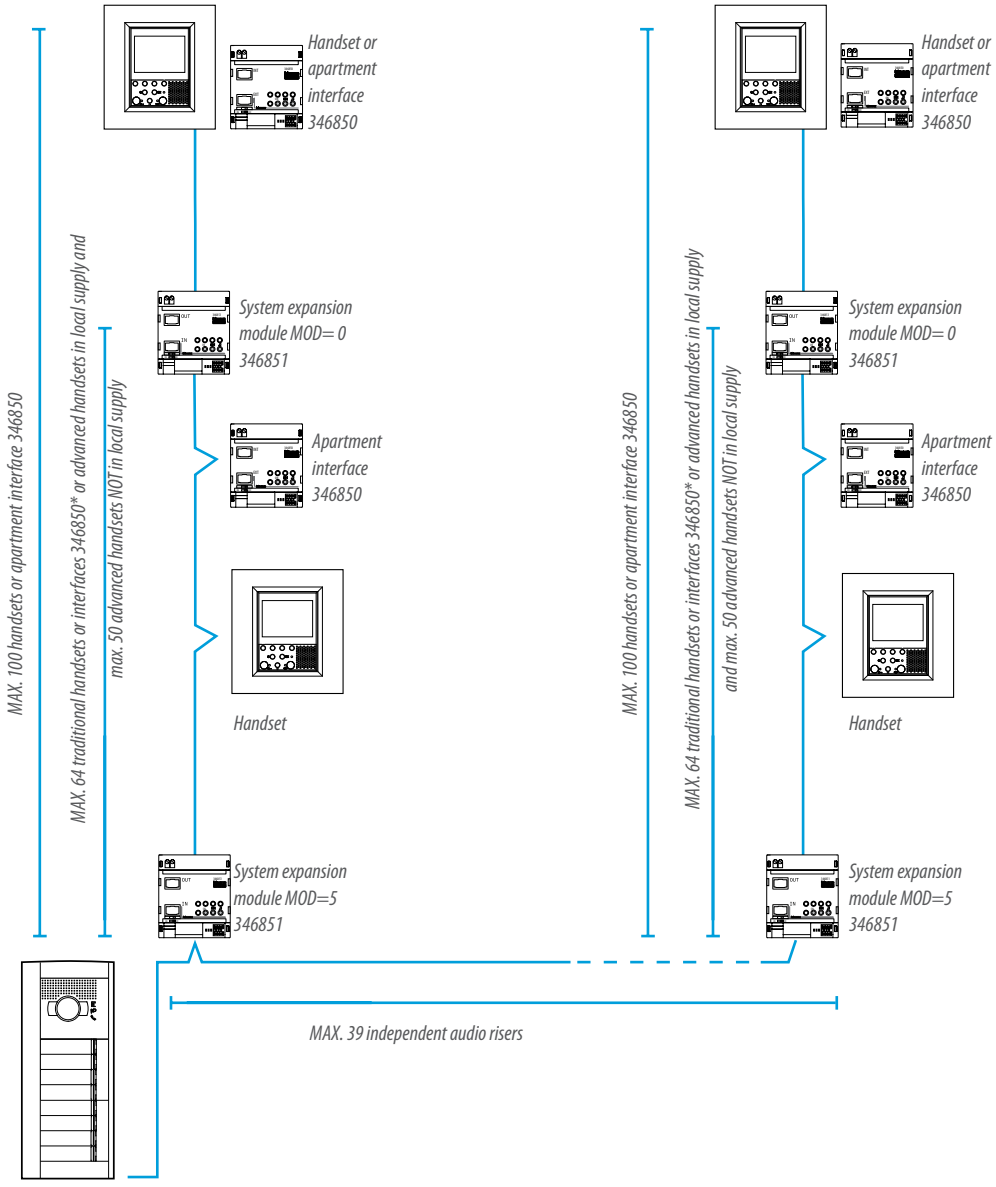
WIRING WITH VIDEO ADAPTER, ITEM 346830



When realizing the system, the need for installing other components must be taken into consideration. These will take the place of handsets:

- for each additional nameplate module (in addition to those already indicated), 3 "traditional" or 1.5 "ADVANCED" handsets must be removed;
- for each special control (item L4651M2) 1 "traditional" handset or 0.5 "ADVANCED" handsets must be removed;
- for each actuator item 346200, general loads or call repeater, 3 "traditional" handset or 1.5 "ADVANCED" handset must be removed (if locally supplied, 1 traditional handset or 0.5 advanced handsets must be removed);
- for each actuator item 346230/ 346260, for door lock, 2 "traditional" handsets or 1 "ADVANCED" handset must be removed;
- for each floor call interface item 346833, 1 "traditional" handset or 0.5 "ADVANCED" handset must be removed. The number of handsets to remove must be rounded by excess. For example if the result is 5.5, 6 handsets must be removed.
- The secondary entrance panels, shown on the tables in the following pages, have been created using pushbutton modules. The number of pushbuttons for each secondary entrance panel is calculated by dividing the total number of handsets that can be installed by the total number of secondary entrance panels.

VIDEO SYSTEM WITH SYSTEM EXPANSION MODULES, ITEM 346851

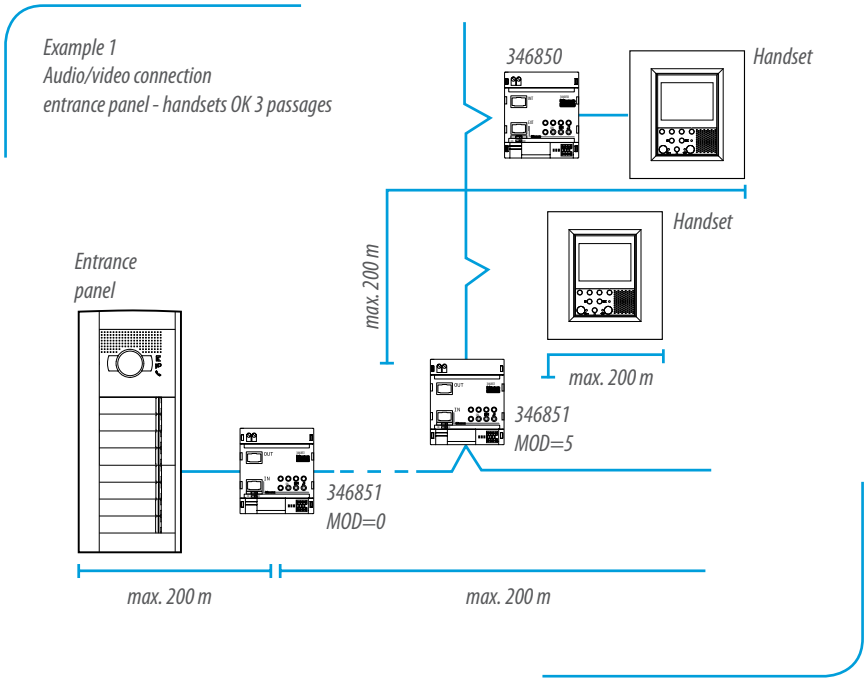


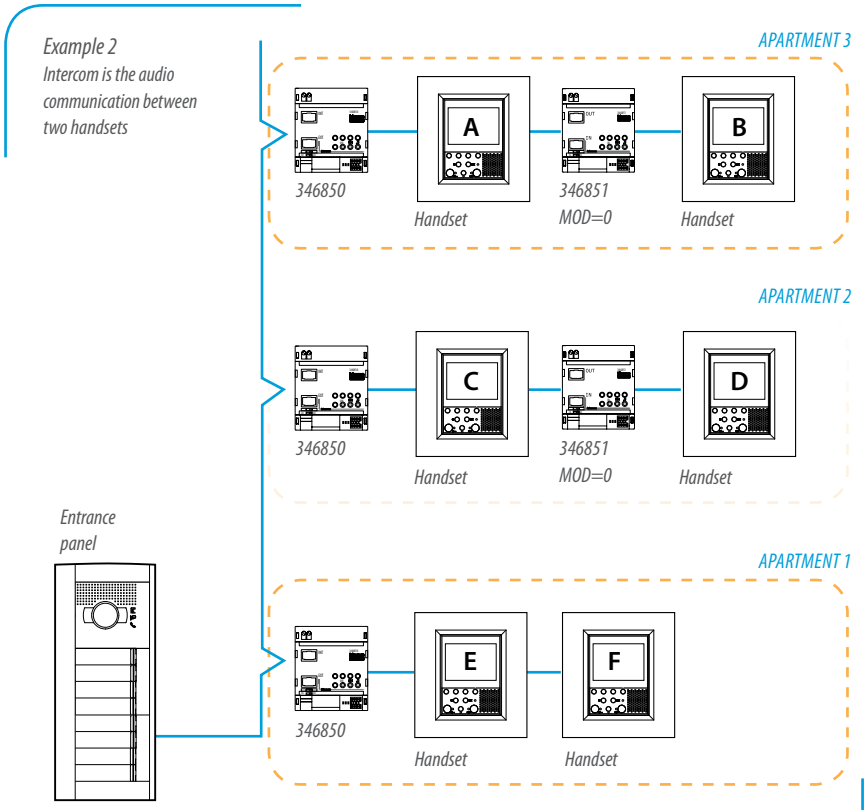
* if only item 346850 apartment interfaces are used on a riser, the limit increases from 64 to 100, when the 346851 system expansion module configured with (MOD = 0).
* Max. 3 handsets, bells and/or melodic bells for each apartment.
* Max 5 handsets, bells and/or melodic bells for each 346850.

Video systems

MAXIMUM LIMITS FOR THE USE OF INTERFACES, ITEM 346850 AND 346851

A maximum of 3 interfaces item 346850 and 346851 can be used in cascade. By interfaces used in cascade, it is meant interfaces crossed by an audio/video entrance panel to handset connection or a handset to handset connection (intercom). Only 2 of these, to be selected by the user, will transfer the signal for 200 metres: the maximum distance between the entrance panel and the furthest handset is 600 m, with each line (EP - interface, interface - interface and interface - handset) of 200 m maximum (using a Bticino cable item 336904). The IN terminal of the system expansion modules with (MOD = 0) must be connected to the system as if it was a handset with local power supply. Therefore, it must be connected to a dedicated output of the audio/video node, item F441 or the floor distribution block, item 346841.





Intercommunication among apartments is only possible between handset separated by a maximum of 3 interfaces, items 346850 and 346851.

Example:

If Handset B Apartment 3 calls Apartment 2, all the Handsets (C and D) of the apartment ring but it is possible to answer only from Handset C (the Handset D is after the 4th interface).

MULTI-FAMILY B/W VIDEO SYSTEMS: MAXIMUM NUMBER OF HANDSETS FOR MULTI-FAMILY SYSTEMS WITH B/W SFERA CLASSIC AND MINISFERA B/W VIDEO ENTRANCE PANELS

The handsets classed as TRADITIONAL are: PIVOT, SWING, SPRINT, POLYX VIDEO.

			SFERA CLASSIC 342170 OR 342350 + 342510 342240	SFERA DIGITAL CALL 342610	SFERA DIGITAL CALL 342630/40	MINISFERA 342708	
No. of Entrance panel B/W video	System power supply	Additional power supply	Max. No. of handsets system with only (TRADITIONAL) Handsets	Max. No. of handsets system with only (TRADITIONAL) Handsets	Max. No. of handsets system with only (TRADITIONAL) Handsets	Max. No. of handsets system with only (TRADITIONAL) Handsets	Max. No. of additional expansion mod. 342704
1 video	1	-	26	26	26	32	3
2 video	1	-	18	18	18	24	4
3 video	1	-	14	14	-	16	6
4 video	1	-	10	10	-	14	4
1 video main + 2 audio secondary or video	1	-	16	16	12	18	4
1 video	1	1	50	64 **	64 **	*	*
2 video	1	2	50	64 **	64 **	*	*
3 video	1	3	50	60 **	60 **	*	*
4 video	1	4	50	56 **	56 **	*	*
1 video main + 2 audio main	1	1	34	42	42	*	*
1 video main + 2 audio secondary	1	1	42	46	46	*	*

** It is NOT possible to power supply locally the MINISFERA entrance panels.*

*** If all the handsets of the system are apartment interfaces (346850), it is possible to install up to 100 video apartments.*

NOTE: when using a handset classed (base) as Basic Swing item 344832, refer to the specific technical sheet, and check the absorption using the YouDiagram software.

Video systems

MULTI-FAMILY VIDEO COLOUR SYSTEMS:

MAXIMUM NUMBER OF HANDSETS FOR COLOUR MULTI-FAMILY SYSTEMS WITH SFERA/SFERA CLASSIC ENTRANCE PANELS

The handsets classed as TRADITIONAL are: PIVOT, SWING, SPRINT, POLYX VIDEO.
The handsets classed as ADVANCED are: AXOLUTE VIDEO DISPLAY, AXOLUTE VIDEO STATION, AXOLUTE N&W VIDEO STATION, AXOLUTE ETÈRIS VIDEO DISPLAY, LIVINGLIGHT VIDEO DISPLAY and POLYX MEMORY DISPLAY.

			SFERA/SFERA CLASSIC CONSIST OF: COLOUR CAMERA – SPEAKER MODULE – A/V – PUSHBUTTONS		SFERA CONSISTS OF: DISPLAY (352500) + KEYPAD (353000) SFERA CLASSIC: KEYPAD (342610)		SFERA CONSISTS OF : SPEAKER MODULE (351100) + CAMERA (352400) + DISPLAY (352500) + KEYPAD (353000) OR A/V (351200 – 351300) + DISPLAY (352500) + KEYPAD (353000) SFERA CLASSIC CONSISTS OF : SPEAKER MODULE WITH DISPLAY (342630) + KEYPAD (342640)	
No. of Entrance panels COLOUR video	System power supply	Additional power supply	Max. No. of handsets - system with only TRADIT. Handsets	Max. No. of handsets-system with one or more ADVANCED Handsets	Max. No. of handsets - system with only TRADIT. Handsets	Max. No. of handsets-system with one or more ADVANCED Handsets	Max. No. of handsets - system with only TRADIT. Handsets	Max. No. of handsets-system with one or more ADVANCED Handsets
1 video	1	-	32	24	32	24	32	24
2 video	1	-	20	16	26	20	20	12
3 video	1	-	16	12	20	16	4	-
4 video	1	-	12	14	14	12	-	-
1 video main + 2 audio sec. or video	1	-	18	14*	22	16	18	12
1 video	1	1	50 *	40*	64 **	40 **	64 **	40 **
2 video	1	2	50 *	40*	64 **	40 **	64 **	40 **
3 video	1	3	50 *	40*	60 **	40 **	60 **	40 **
4 video	1	4	50 *	40*	56 **	40 **	56 **	40 **
1 video main* 2 audio main	1	1	34	24	42	24	42	24
1 video main* 2 audio secondary	1	1	42	28	46	28	46	28

** Use the SFERA audio/video module (item 342560) with 2 column pushbutton modules (item 342480).*

*** If all the handsets of the system are apartment interfaces (346850), it is possible to install up to 100 video apartments.*

MAXIMUM NUMBER OF HANDSETS FOR COLOUR MULTI-FAMILY SYSTEMS WITH AXOLUTE OUTDOOR ENTRANCE PANELS

The handsets classed as traditional are: PIVOT, SWING, SPRINT, POLYX VIDEO.
The handsets classed as advanced are: POLYX VIDEO DISPLAY, AXOLUTE VIDEO DISPLAY, AXOLUTE VIDEO STATION, AXOLUTE N&W VIDEO STATION, AXOLUTE ETÈRIS VIDEO DISPLAY, LIVINGLIGHT VIDEO DISPLAY and POLYX MEMORY DISPLAY.

			AXOLUTE OUTDOOR 349140	
No. of Entrance panels COLOUR video	System power supply	Additional power supply	Max. No. of handsets - sys. with only TRADITIONAL Handsets	Max. No. of handsets-sys. with one or more ADVANCED Handsets
1 video	1	*	24	16
1 video	1	1	64	40
2 video	1	2	64	40
3 video	1	3	60	38
4 video	1	4	56	38

** Additional power supply needed for distances (item 346000 power supply and Entrance Panel) > 50 m (with cable item 336904).*

BLACK&WHITE AND COLOUR VIDEO SYSTEMS

MAXIMUM NO. OF HANDSETS FOR SINGLE-FAMILY AND MULTI-FAMILY SYSTEMS WITH ITEM 346850 APARTMENT INTERFACE

Black and white video entrance panels (with keys).

The handsets classed as TRADITIONAL are: PIVOT, SWING, SPRINT, POLYX VIDEO.

		SFERA CLASSIC 342170 + 342510	LINEA 2000 342951	L2000 METAL 342981	MINISFERA 342708
No. of Entrance panels B/W video private	System power supply	Max. No. of handsets system with only (TRADITIONAL) Handsets	Max. No. of handsets system with only (TRADITIONAL) Handsets	Max. No. of handsets system with only (TRADITIONAL) Handsets	Max. No. of handsets system with only (TRADITIONAL) Handsets
1 video	1	5			
2 video	1				
3 video	1				
4 video (*)	1				

NOTE: when using a handset classed (base) as Basic Swing item 344832, refer to the specific technical sheet, and check the absorption using the YouDiagram software.

Colour video entrance panels (with keys or AXOLUTE Outdoor).

The handsets classed as TRADITIONAL are: PIVOT, SWING, SPRINT, POLYX VIDEO

The handsets classed as ADVANCED are: POLYX VIDEO DISPLAY, AXOLUTE VIDEO DISPLAY, AXOLUTE Etèris VIDEO DISPLAY, LIVINGLIGHT VIDEO DISPLAY, AXOLUTE VIDEO STATION, AXOLUTE N&W VIDEO STATION and POLYX MEMORY STATION.

		SFERA/SFERA CLASSIC	SFERA/SFERA CLASSIC A/V 342560 + L2000 METAL (FLUSH MOUNTED) (343001)	L2000 METAL (WALL MOUNTED) (342991)	AXOLUTE OUTDOOR (349140)
No. of Entrance panels colour video private	System power supply	Max. No. of handsets system with (TRADITIONAL or ADVANCED) Handsets	Max. No. of handsets system with (TRADITIONAL or ADVANCED) Handsets	Max. No. of handsets system with (TRADITIONAL or ADVANCED) Handsets	Max. No. of handsets system with (TRADITIONAL or ADVANCED) Handsets
1 video	1	5			5 **
2 video	1				5 **
3 video	1				5 ***
4 video *	1				5 ***

** for single-family systems only (without apartment interface)*

*** if the distance from the power supply is > 50 metres, the Entrance Panel must have a local power supply*

****the Entrance Panel must always be powered locally*

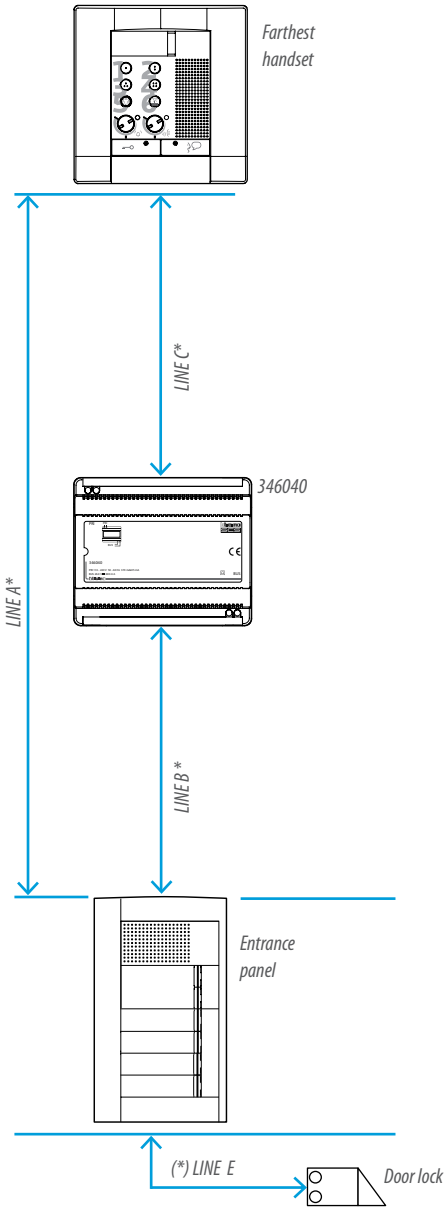
WARNING: only in single-family systems or below apartment interface, up to 5 AXOLUTE Nighter&Whice Handsets may still be installed.

System performances - audio systems

The following pages provide a general indication of the maximum distances that can be achieved depending on the type of cable used.
For installation solutions or types other than those shown, the distances and the current absorptions can be calculated using the YouDiagram software (which can be downloaded free of charge from the website www.bticino.com (ASSISTANCE AND TOOLS - SOFTWARE).

AUDIO SYSTEM - MAX. 56 HANDSETS

The device connection is non-polarised.
Using conductors with different cross-sections from those prescribed does not guarantee good operation of the system.



System made with SFERA modules:
- *SFERA/SFERA classic*
- *Power supply, item 346040*

System with existing pushbutton:
- *Universal speaker phone, item 346991*
- *Module for additional pushbuttons, item 346992*
- *Power supply, item 346040*

(*) Max. variable distance

MAX. DISTANCE - LINE C - FARTHEST HANDSET - POWER SUPPLY

Cable section mm²	0.28 mm²	BTicino cable L4669	BTicino cable 336904	1 mm²
56 Handsets	110 m	120 m	170 m	340 m
40 Handsets	130 m	140 m	200 m	400 m
26 Handsets	150 m	165 m	230 m	460 m
18 Handsets	170 m	180 m	250 m	500 m

MAX. DISTANCE - LINE B - POWER SUPPLY - ENTRANCE PANEL

Cable section mm²	0.28 mm²	BTicino cable L4669	BTicino cable 336904	1 mm²
56 Pushbuttons	115 m	125 m	175 m	350 m
40 Pushbuttons	120 m	130 m	185 m	370 m
26 Pushbuttons	130 m	150 m	210 m	420 m
18 Pushbuttons	140 m	160 m	220 m	440 m

MAX. DISTANCE - LINE D - SPEAKER MODULE - DOOR LOCK

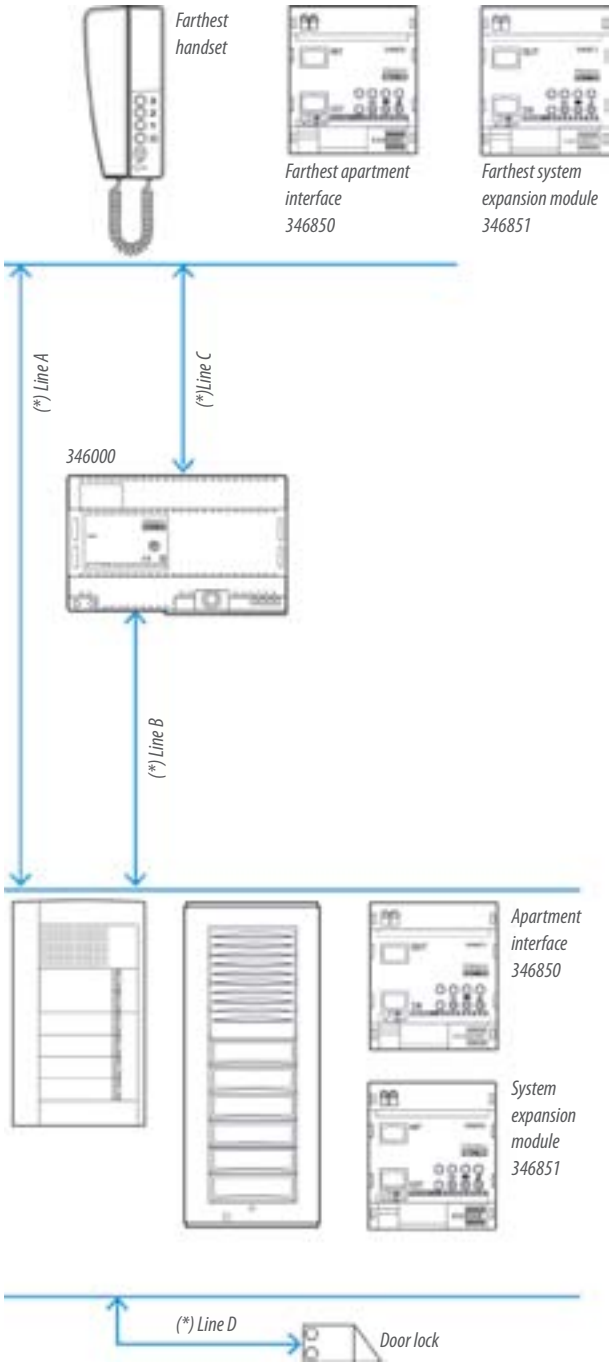
Cable section mm²	0.28 mm²	BTicino cable L4669	BTicino cable 336904	1 mm²
S+ S- clamps	30 m	30 m	50 m	100 m

Note: For EP with door lock control relays (E.g. Sfera classic 342150), an additional transformer, item 336842, must be installed

AUDIO SYSTEMS - MAX. 100 HANDSETS

The device connection is non-polarised.

Using conductors with different cross-sections from those prescribed does not guarantee good operation of the system.



System made with AUDIO modules:

- *SFERA/SFERA classic*
- *power supply, item 346000*

System with existing pushbutton:

- *universal speaker phone, item 346991*
- *module for additional pushbuttons, item 346992*
- *power supply 346000*

System made with MINISFERA modules:

- *speaker phone, item 347202*
- *expansion module, item 342704*
- *power supply, item 346000*
- *MINISFERA composition with only single pushbuttons, item 332712*

The distances for the audio system **with at least one interface (in bold type)** and for the audio system without interfaces are shown in the tables.

MAX. DISTANCE - LINE C - FARTHEST HANDSET - POWER SUPPLY

Cable section mm²	0.28 mm²		BTicino cable L4669		BTicino cable 336904		1 mm²	
100 Handsets	**100 m**	100 m	**110 m**	110 m	**150 m**	150 m	**320 m**	320 m
66 Handsets	**120 m**	120 m	**130 m**	130 m	**190 m**	190 m	**380 m**	380 m
50 Handsets	**140 m**	150 m	**150 m**	160 m	**200 m**	250 m	**450 m**	450 m
26 Handsets	**140 m**	180 m	**150 m**	190 m	**200 m**	320 m	**450 m**	560 m

MAX. DISTANCE - LINE B - POWER SUPPLY - ENTRANCE PANEL

Cable section mm²	0.28 mm²		BTicino cable L4669		BTicino cable 336904		1 mm²	
100 pushbuttons	**100 m**	100 m	**110 m**	110 m	**180 m**	180 m	**310 m**	310 m
66 pushbuttons*	**130 m**	130 m	**140 m**	110 m	**200 m**	240 m	**420 m**	420 m
50 pushbuttons	**140 m**	150 m	**150 m**	160 m	**200 m**	250 m	**450 m**	450 m
26 pushbuttons	**140 m**	200 m	**150 m**	210 m	**200 m**	290 m	**450 m**	580 m
342630 + 342640	**130 m**	130 m	**140 m**	140 m	**200 m**	240 m	**420 m**	420 m
342610 + n° 9 342200	**130 m**	130 m	**140 m**	140 m	**200 m**	240 m	**420 m**	420 m

(*) Only for MINISFERA entrance panel

Line A = line B+line C with line A max = 1000m without interfaces 346850 and 346851

MAX. DISTANCE - LINE A WITH INTERFACES 346850 AND 346851

Cable section mm²	0.28 mm²	BTicino cable L4669	BTicino cable 336904	1 mm²
	140 m	150 m	200 m	450 m

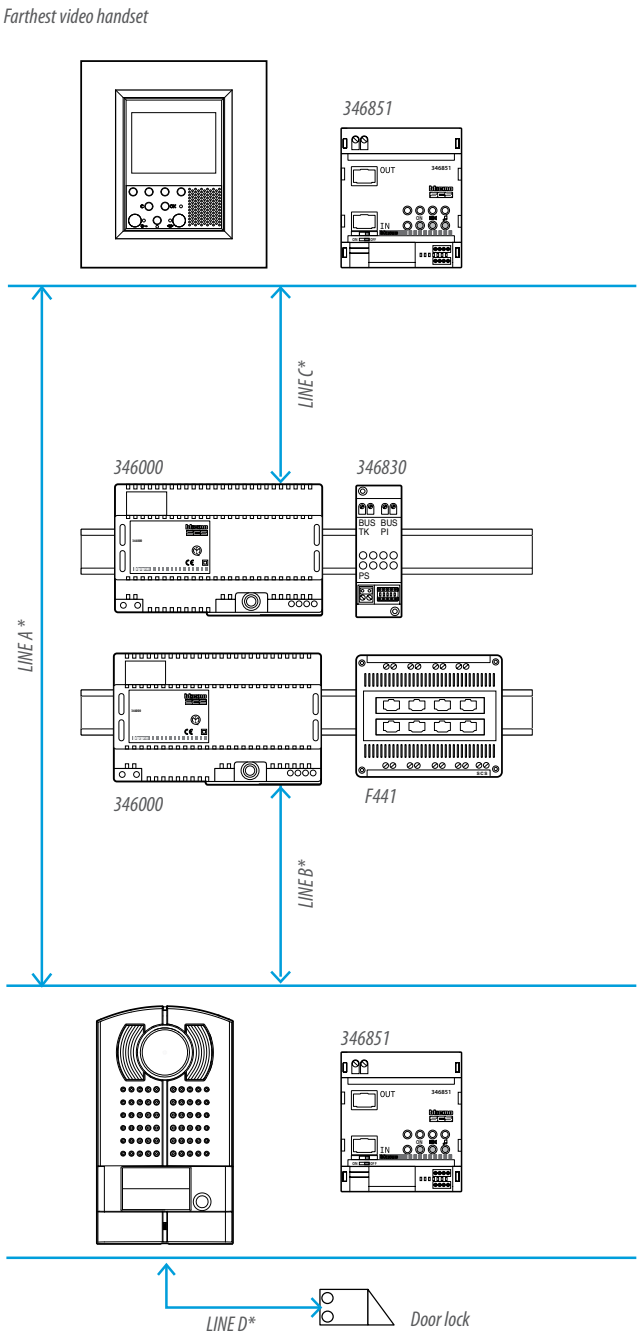
MAX. DISTANCE - LINE D - SPEAKER PHONE - DOOR LOCK

Cable section mm²	0.28 mm²	BTicino cable L4669	BTicino cable 336904	1 mm²
S+ S- clamps	30 m	30 m	50 m	100 m

System performances - one-family systems

MAXIMUM DISTANCES AND FEATURES OF THE CABLES

Systems made with an advanced handsets. Using conductors with different cross-sections from those prescribed does not guarantee good operation and the good quality of the video signal.



(*) Max. variable distance

Note: for those systems where only apartment interfaces are installed (in/out connection), the distance of the C LINE to take into account is 200 m.

MAXIMUM DISTANCE LINE A ENTRANCE PANEL - FARTHEST HANDSET (COLOUR AND B/W ENTRANCE PANEL)

Cable section mm²	2 normal cables > 0.2 mm² or L4669	BTicino cable 336904	twisted telephone pair 0.28 mm²	a pair of the multipair data cable CAT5
5 handsets IN/OUT	50 m	200 m	140 m	140 m
5 one-family handset/outdoor entrance panel	50 m	200 m	100 m	70 m
5 PI monof/EP with local supply	50 m	200 m	140 m	170 m

MAX. DISTANCE LINE C POWER SUPPLY - FARTHEST HANDSET (COLOUR AND B/W ENTRANCE PANEL)

Cable section mm²	2 normal cables > 0.2 mm² or L4669	BTicino cable 336904	twisted telephone pair 0.28 mm²	a pair of the multipair data cable CAT5
5 handsets IN/OUT	50 m	110 m	70 m	50 m
5 handsets (with floor shunts)	50 m	110 m	70 m	50 m

MAXIMUM DISTANCE LINE B ENTRANCE PANEL - POWER SUPPLY (COLOUR AND B/W ENTRANCE PANEL)

Cable section mm²	2 normal cables > 0.2 mm² or L4669	BTicino cable 336904	twisted telephone pair 0.28 mm²	a pair of the multipair data cable CAT5
2 pushbuttons	50 m	200 m	115 m	90 m
Outdoor entrance panel	20 m	50 m	30 m	20 m
Entrance panel with local supply	50 m	200 m	140 m	120 m

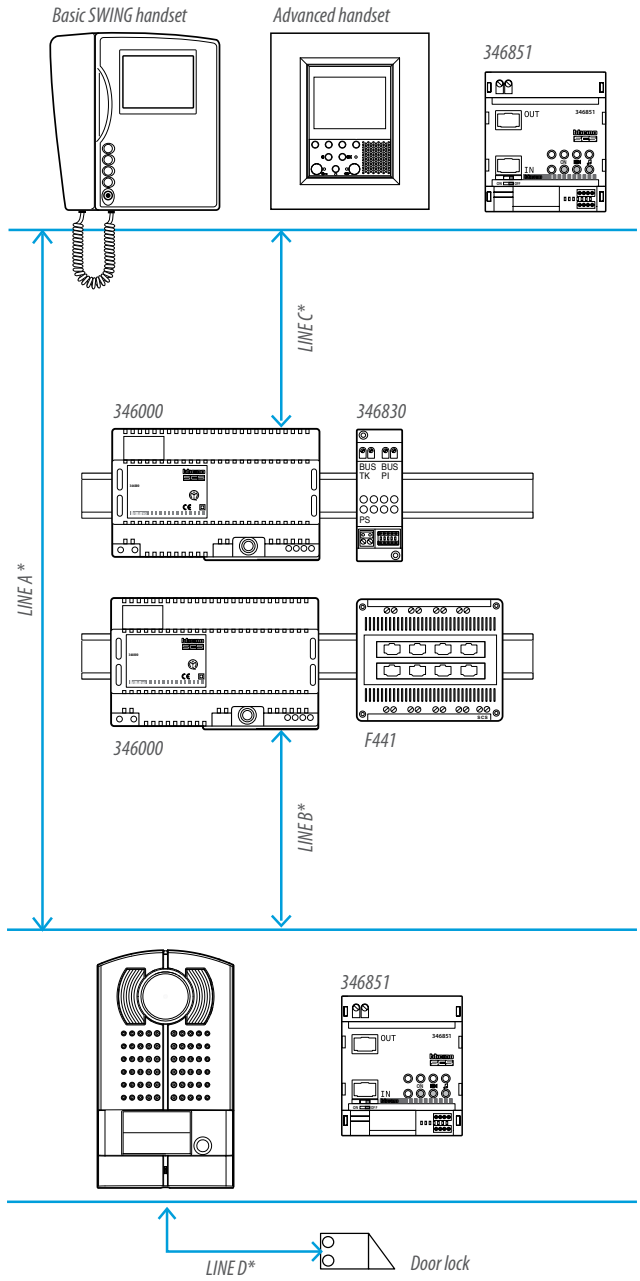
MAX. DISTANCE LINE D ENTRANCE PANEL - DOOR LOCK (COLOUR AND B/W ENTRANCE PANEL)

Cable section mm²	0.28 mm²	BTicino SCS cable L4669	BTicino SCS cable 336904	1 mm²
S+ S- clamps	30 m	30 m	50 m	100 m

MAXIMUM DISTANCES AND FEATURES OF THE CABLES

Systems created using advanced or traditional handsets with at least one Basic SWING (item 344832) video handset.

Farthest video handset



MAXIMUM DISTANCE LINE A ENTRANCE PANEL - FARTHEST HANDSET (COLOUR AND B/W ENTRANCE PANEL)

Cable section mm²	2 normal cables >0.2 mm²	BTicino cable 336904	twisted telephone pair 0.28 mm²	a pair of the multipair data cable CAT5
5 one-family handset/pushbutton EP	50 m	200 m	140 m	135 m
5 one-family handset/EP with local supply	50 m	200 m	140 m	165 m

MAX. DISTANCE LINE C POWER SUPPLY - FARTHEST HANDSET (COLOUR AND B/W ENTRANCE PANEL)

Cable section mm²	2 normal cables >0.2 mm²	BTicino cable 336904	twisted telephone pair 0.28 mm²	a pair of the multipair data cable CAT5
5 handsets IN/OUT	45 m	100 m	65 m	45 m
5 handsets (with floor shunts)	45 m	100 m	65 m	45 m

Note: LINE C valid in case of SFERA entrance panel (342170 + 342510), SFERA (342170 + 342550), SFERA A/V (342560) or LINEA 2000.

MAXIMUM DISTANCE LINE B ENTRANCE PANEL - POWER SUPPLY (COLOUR AND B/W ENTRANCE PANEL)

Cable section mm²	2 normal cables >0.2 mm²	BTicino cable 336904	twisted telephone pair 0.28 mm²	a pair of the multipair data cable CAT5
2 pushbuttons	50 m	200 m	115 m	90 m
Entrance panel with local supply	50 m	200 m	140 m	120 m

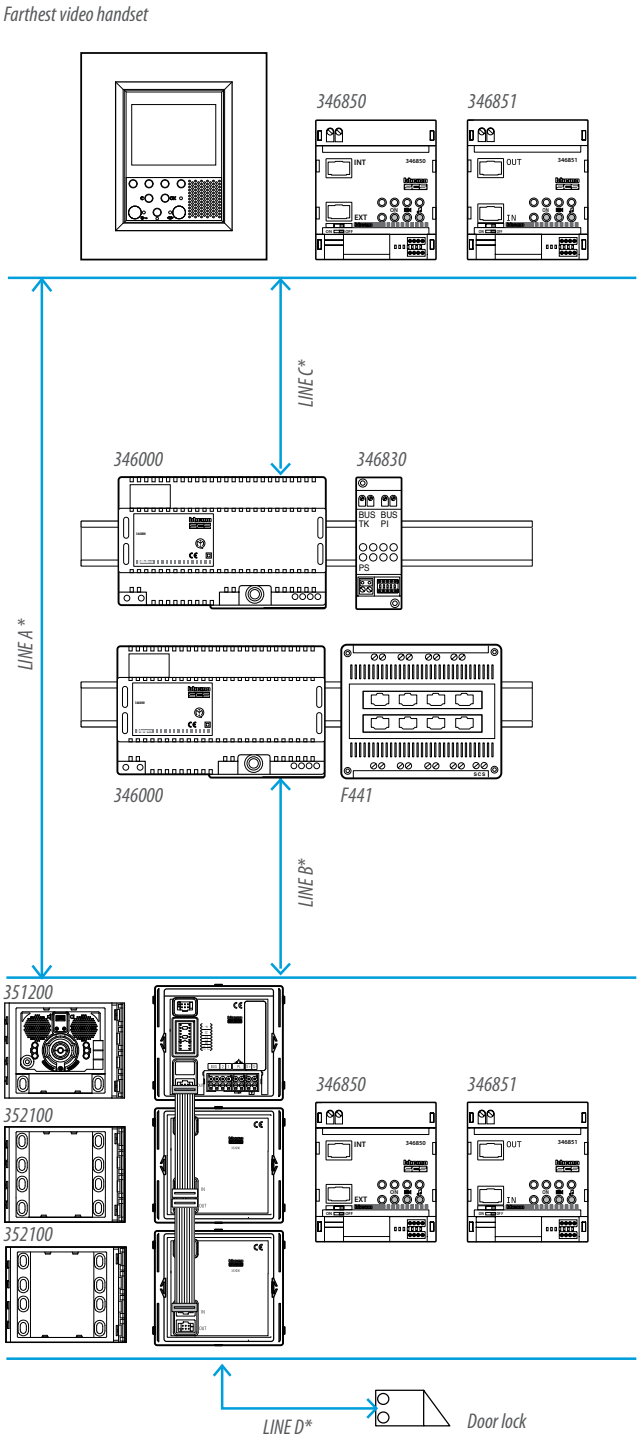
MAX. DISTANCE LINE D ENTRANCE PANEL - DOOR LOCK (COLOUR AND B/W ENTRANCE PANEL)

Cable section mm²	2 normal cables >0.2 mm²	BTicino cable 336904	twisted telephone pair 0.28 mm²	a pair of the multipair data cable CAT5
S+S– clamps	30 m	30 m	50 m	100 m

System performances - multi-family systems

MAXIMUM DISTANCES AND FEATURES OF THE CABLES

Systems created using advanced or traditional handsets with at least one Basic SWING (item 344832) video handset.



MAXIMUM DISTANCE LINE A ENTRANCE PANEL - FARTHEST HANDSET (B/W ENTRANCE PANEL)

Cable section mm²	2 normal cables >0.2 mm²	BTicino cable 336904	twisted telephone pair 0.28 mm²	a pair of the multipair data cable CAT5
2 handsets/2 pushbuttons	50 m	200 m	135 m	135 m
5 handsets/5 pushbuttons	50 m	200 m	135 m	120 m
10 handsets/10 pushbuttons	50 m	200 m	135 m	115 m
26 handsets/26 pushbuttons	50 m	200 m	135m	105 m
40 handsets/entrance panel with local supply	50m	200 m	135 m	-
40 handsets/digital call modules	50 m	200 m	135 m	-

MAXIMUM DISTANCE LINE A ENTRANCE PANEL - FARTHEST HANDSET (COLOUR ENTRANCE PANEL)

Cable section mm²	2 normal cables >0.2 mm²	BTicino cable 336904	twisted telephone pair 0.28 mm²	a pair of the multipair data cable CAT5
2 handsets/2 pushbuttons	50 m	200 m	140 m	135 m
5 handsets/5 pushbuttons	50 m	200 m	140 m	120 m
10 handsets/10 pushbuttons	50 m	200 m	140 m	115 m
24 handsets/24 pushbuttons	50 m	200 m	140 m	100 m
30 handsets/entrance panel with local supply	50 m	200 m	140 m	-

MAX. DISTANCE LINE D ENTRANCE PANEL - DOOR LOCK (COLOUR AND B/W ENTRANCE PANEL)

Cable section mm²	0.28 mm²	BTicino cable L4669	BTicino cable 336904	1 mm²
S+S– clamps	30 m	30 m	50 m	100 m

(*) Max. variable distance

Note: for those systems where only apartment interfaces are installed (in/out connection), the distance of the C LINE to take into account is 200 m.

MAX. DISTANCE LINE C POWER SUPPLY - FARTHEST HANDSET (1) (B/W ENTRANCE PANEL)

Cable section mm^2	2 normal cables $>0.2\ mm^2$	BTicino cable 336904	twisted telephone pair $0.28\ mm^2$	a pair of the multipair data cable CAT5
2 handsets IN/OUT	45 m	100 m	65 m	45 m
5 handsets IN/OUT	45 m	100 m	65 m	45 m
10 handsets IN/OUT	45 m	100 m	65 m	45 m
18 handsets IN/OUT	45 m	100 m	65 m	45 m
22 handsets IN/OUT	40 m	95 m	65 m	40 m
26 handsets IN/OUT	40 m	90 m	60 m	40 m
5 handsets (with floor shunt)	45 m	100 m	65 m	45 m
10 handsets (with floor shunt))	40 m	95 m	65 m	40 m
18 handsets (with floor shunt)	40 m	85 m	55 m	40 m
22 handsets (with floor shunt)	-	75 m	50 m	-
26 handsets (with floor shunt)	-	60 m	40 m	-
30 handsets (with floor shunt) (2)	-	80 m	50 m	-
40 handsets (with floor shunt) (2)	-	60 m	40 m	-

MAXIMUM DISTANCE LINE B ENTRANCE PANEL - POWER SUPPLY (COLOUR AND B/W ENTRANCE PANEL)

Cable section mm^2	2 normal cables $>0.2\ mm^2$ o L4669	BTicino cable 336904	Twisted telephone pair $0.28\ mm^2$	A pair of the multipair data cable CAT5
2 pushbuttons	50 m	200 m	115 m	90 m
10 pushbuttons	50 m	170 m	100 m	75 m
26 pushbuttons	50 m	150 m	95 m	65 m
Digital call	50 m	150 m	95 m	65 m
Entrance panel with local supply	50 m	200 m	140 m	120 m

MAX. DISTANCE LINE C POWER SUPPLY - FARTHEST HANDSET (1) (COLOUR ENTRANCE PANEL)

Cable section mm^2	2 normal cables $> 0.2\ mm^2$	BTicino cable 336904	twisted telephone pair $0.28\ mm^2$	a pair of the multipair data cable CAT5
2 handsets IN/OUT	45 m	100 m	65 m	45 m
5 handsets IN/OUT	45 m	100 m	65 m	45 m
10 handsets IN/OUT	40 m	90 m	60 m	40 m
18 handsets IN/OUT	40 m	85 m	55 m	40 m
24 handsets IN/OUT	-	75 m	50 m	35 m
5 handsets (with floor shunt)	40 m	100 m	65 m	45 m
10 handsets (with floor shunt)	40 m	85 m	55 m	40 m
18 handsets (with floor shunt)	-	80 m	50 m	-
24 handsets (with floor shunt)	-	50 m	-	-
30 handsets (with floor shunt) (2)	-	60 m	40 m	-

WARNING: in order to reach longer distances, instead of the video adapter item 346830, the audio/video node, item F441 (generating up to 4 risers), may be used.

In this mode, one of the previous conditions, with less Handsets and a longer distance on the C LINE, is recreated.

Note (1): LINE C valid in case of SFERA/SFERA classic or LINEA 2000.

System performances - multi-family systems

MAXIMUM DISTANCES AND FEATURES OF THE CABLES

System made with only traditional handsets

MAXIMUM DISTANCE LINE A ENTRANCE PANEL - FARTHEST HANDSET (COLOUR AND B/W ENTRANCE PANEL)

Cable section mm²	2 normal cables >0.2 mm²	BTicino cable 336904	twisted telephone pair 0.28 mm²	a pair of the multipair data cable CAT5
2 handsets/2 pushbuttons	50 m	200 m	140 m	180 m
5 handsets/5 pushbuttons	50 m	200 m	140 m	155 m
10 handsets/10 pushbuttons	50 m	200 m	140 m	145 m
26 handsets/26 pushbuttons	50 m	200 m	140 m	125 m
38 handsets/38 pushbuttons	50 m	200 m	140 m	110 m
38 handsets/38 pushbuttons with local supply	50 m	200 m	140 m	170 m
38 handsets/digital call modules	50 m	200 m	140 m	115 m
64 handsets/digital call modules	50 m	200 m	140 m	-

MAX. DISTANCE LINE C POWER SUPPLY - FARTHEST HANDSET (COLOUR AND B/W ENTRANCE PANEL)

Cable section mm²	2 normal cables >0.2 mm²	BTicino cable 336904	twisted telephone pair 0.28 mm2	a pair of the multipair data cable CAT5
2 handsets IN/OUT	50 m	200 m	130 m*	90 m*
5 handsets IN/OUT	50 m	200 m	130 m	90 m
10 handsets IN/OUT	50 m	190 m	120 m	80 m
26 handsets IN/OUT	50 m	170 m	110 m	70 m
5 handsets (with floor shunt)	50 m	200 m	110 m	80 m
10 handsets (with floor shunt)	50 m	160 m	100 m	70 m
26 handsets (with floor shunt)	50 m	130 m	80 m	60 m
38 handsets (with floor shunt)	50 m	110 m	70 m	50 m
64 handsets (with floor shunt)	+	85 m	55 m	-

MAXIMUM DISTANCE LINE B ENTRANCE PANEL - POWER SUPPLY (COLOUR AND B/W ENTRANCE PANEL)

Cable section mm²	2 normal cables > 0.2 mm² or L4669	BTicino cable 336904	twisted telephone pair 0.28 mm²	a pair of the multipair data cable CAT5
2 pushbuttons	50 m	200 m	115 m	90 m
10 pushbuttons	50 m	170 m	100 m	75 m
26 pushbuttons	50 m	150 m	95 m	65 m
38 pushbuttons	50 m	140 m	90 m	60 m
≥ 38 pushbuttons with local power supply	50 m	200 m	140 m	120 m
digital call	50 m	150 m	95 m	65 m

MAX. DISTANCE LINE D ENTRANCE PANEL - DOOR LOCK (COLOUR AND B/W ENTRANCE PANEL)

Cable section mm²	0.28 mm²	BTicino cable L4669	BTicino cable 336904	1 mm²
S+S– clamps	30 m	30 m	50 m	100 m

System made with at least advanced handsets

MAXIMUM DISTANCE LINE A ENTRANCE PANEL - FARTHEST HANDSET (COLOUR AND B/W ENTRANCE PANEL)

Cable section mm²	2 normal cables >0.2 mm²	BTicino cable 336904	twisted telephone pair 0.28 mm²	a pair of the multipair data cable CAT5
2 handsets/2 pushbuttons	50 m	200 m	140 m	145 m
5 handsets/5 pushbuttons	50 m	200 m	140 m	135 m
10 handsets/10 pushbuttons	50 m	200 m	140 m	130 m
26 handsets/26 pushbuttons	50 m	200 m	140 m	105 m
38 handsets/38 pushbuttons	50 m	200 m	140 m	95 m
38 handsets/38 pushbuttons with local supply	50 m	200 m	140 m	155 m
38 handsets/digital call modules	50 m	200 m	140 m	90 m

MAX. DISTANCE LINE C POWER SUPPLY - FARTHEST HANDSET (COLOUR AND B/W ENTRANCE PANEL)

Cable section mm²	2 normal cables >0.2 mm²	BTicino cable 336904	twisted telephone pair 0.28 mm²	a pair of the multipair data cable CAT5
2 handsets IN/OUT	50 m	150 m	100 m	65 m
5 handsets IN/OUT	50 m	140 m	90 m	60 m
10 handsets IN/OUT	50 m	130 m	80 m	60 m
26 handsets IN/OUT	50 m	110 m	70 m	50 m
5 handsets (with floor shunt)	50 m	140 m	90 m	60 m
10 handsets (with floor shunt)	50 m	120 m	80 m	55 m
26 handsets (with floor shunt)	50 m	95 m	60 m	40 m
38 handsets (with floor shunt)	50 m	80 m	50 m	35 m

MAXIMUM DISTANCE LINE B ENTRANCE PANEL - POWER SUPPLY (COLOUR AND B/W ENTRANCE PANEL)

Cable section mm²	2 normal cables > 0.2 mm² or L4669	BTicino cable 336904	twisted telephone pair 0.28 mm²	a pair of the multipair data cable CAT5
2 pushbuttons	50 m	200 m	115 m	90 m
10 pushbuttons	50 m	170 m	100 m	75 m
26 pushbuttons	50 m	150 m	95 m	65 m
38 pushbuttons	50 m	140 m	90 m	60 m
≥ 38 pushbuttons with local power supply	50 m	200 m	140 m	120 m
digital call	50 m	150 m	95 m	65 m

MAX. DISTANCE LINE D ENTRANCE PANEL - DOOR LOCK (COLOUR AND B/W ENTRANCE PANEL)

Cable section mm²	0.28 mm²	BTicino cable L4669	BTicino cable 336904	1 mm²
S+S– clamps	30 m	30 m	50 m	100 m

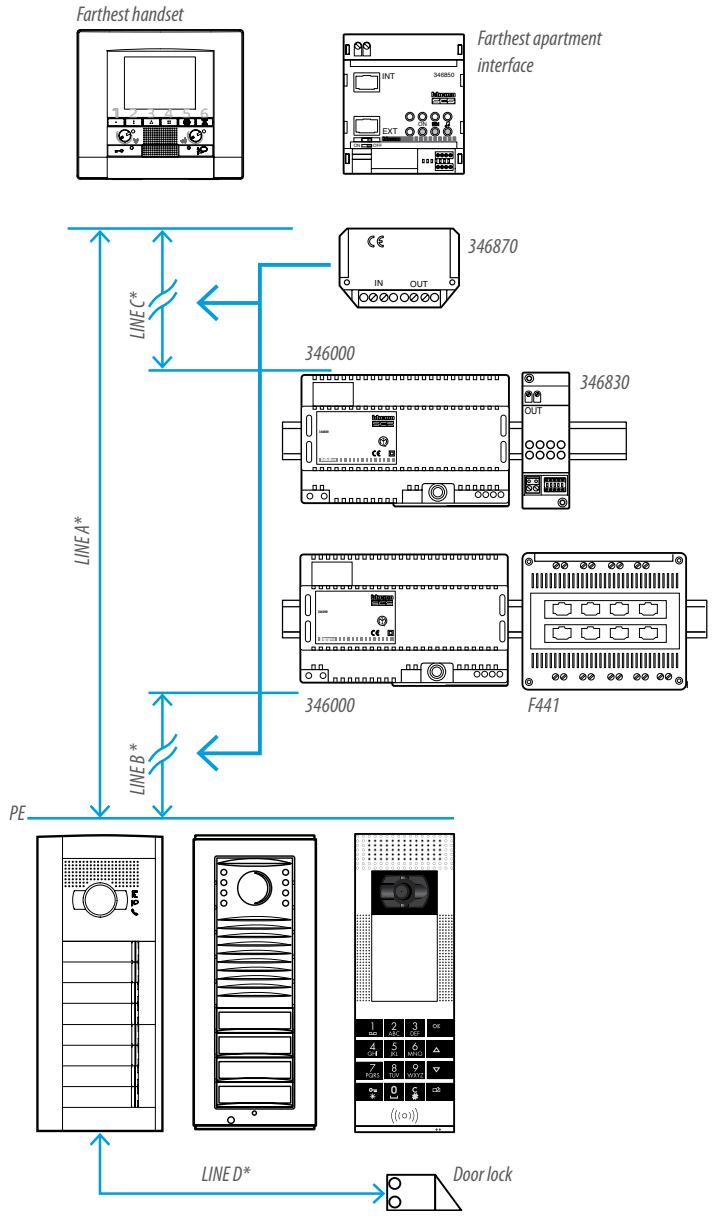
If all the "advanced" handsets in the system are locally supplied, the system is to be considered made with only "traditional" handsets.

In systems with more than 26 handsets it is recommended to realize risers with max. 26 handsets.

VIDEO SYSTEMS WITH AMPLIFIER, ITEM 346870 (ONLY WITH NOT TWISTED CABLES)

Using the amplifier 346870 enables creating systems using twisted cables longer than 50 m (max 100 m). Its use is ideal for refurbishment and repair of already existing systems.

- The signal amplifier must be used with non twisted, non polarized cables, with a section of ≥0.28 mm^2.
- The signal amplifier must be installed at approximately 50 metres from the entrance panel (or camera). Shorter distances may cause distortion of the video signal, while longer distances would make it useless. When using audio/video node F441, in order to avoid distortion of the video signal on the node inputs not needing amplification (<50m), it is recommended that item 346870 is installed on the line B of the amplifier inputs only.
- A maximum of 18 handsets can be installed downstream the amplifier.



(*) Max. variable distance

MAX. DISTANCE LINE A
ENTRANCE PANEL - FARTHEST HANDSET

Without 346870	With 346870
50 m	100 m

MAX. DISTANCE LINE C
FARTHEST HANDSET - POWER SUPPLY

Without 346870	With 346870
50 m	100 m

MAX. DISTANCE LINE D
ENTRANCE PANEL - DOOR LOCK

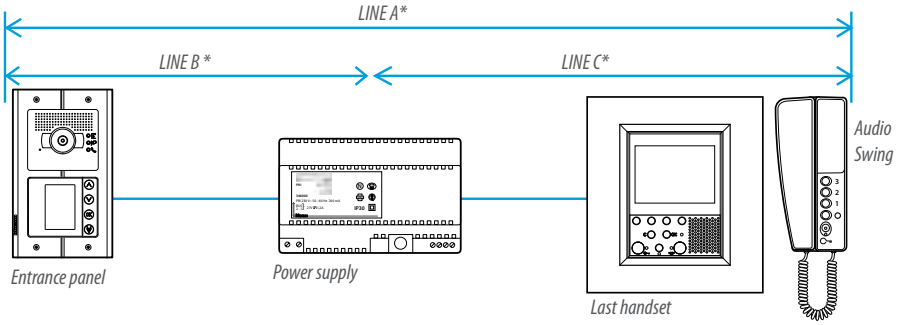
Cable section mm^2	0.28 mm^2	BTicino SCS cable L4669	BTicino SCS cable 336904	1 mm^2
S+ S- clamps	30 m	30 m	50 m	100 m

System performances - video system

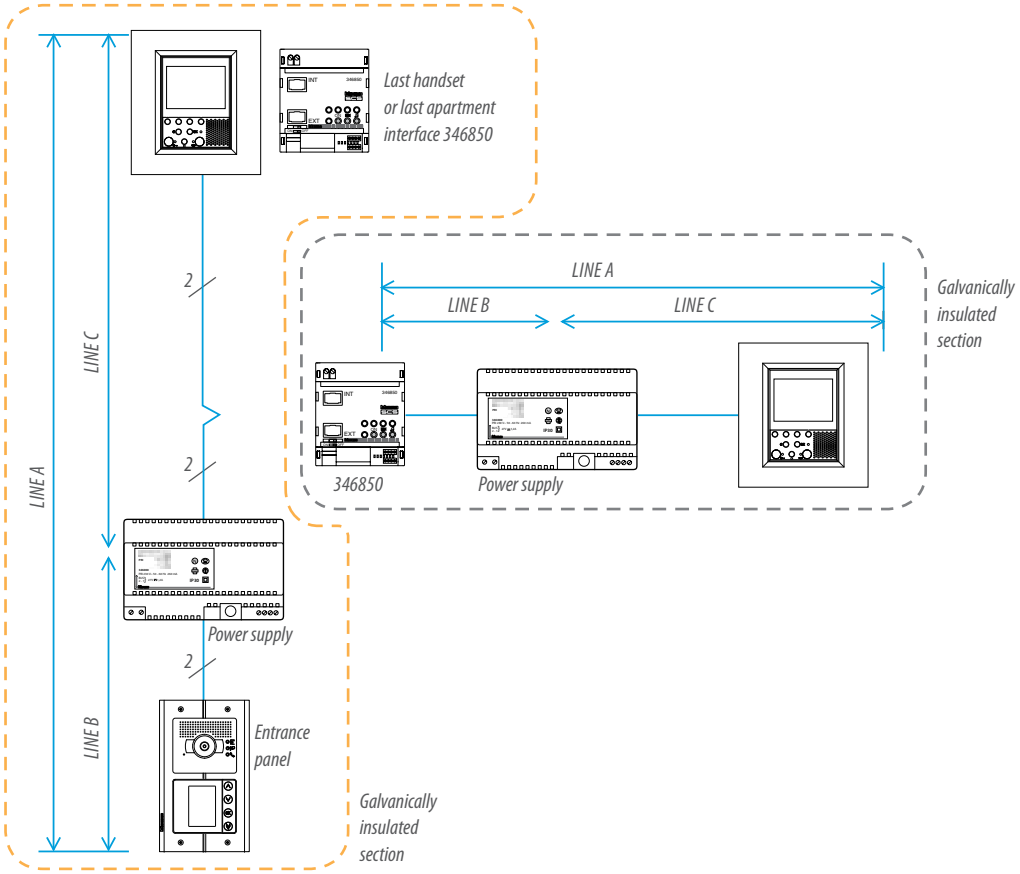
GENERAL RULES FOR THE CALCULATION OF DISTANCES

In video systems the max. distance between the EP and the furthest handset is 600 m when the BTicino cable 336904 and 2 interfaces 346850 and 346851 are used. Interfaces 346850 and/or 346851 introduce a galvanic separation of the system.
In audio systems the max. distance between the EP and the furthest handset is 1 km when a sheathed cable 1 mm^2 is used. If apartment interfaces (346850) or system expansion modules (346851) are included in the system, the max. distance can be extended to 1350 m. In order to calculate the system max. extensions, it is necessary to identify the galvanically insulated sections, as well as the A, B and C line of each section. The max. permitted distance must also be checked on the table, based on the items installed and the cable used. Following are some examples of how to identify the LINES.

AUDIO OR VIDEO SYSTEM WITHOUT INTERFACES OR SYSTEM EXPANSION MODULES



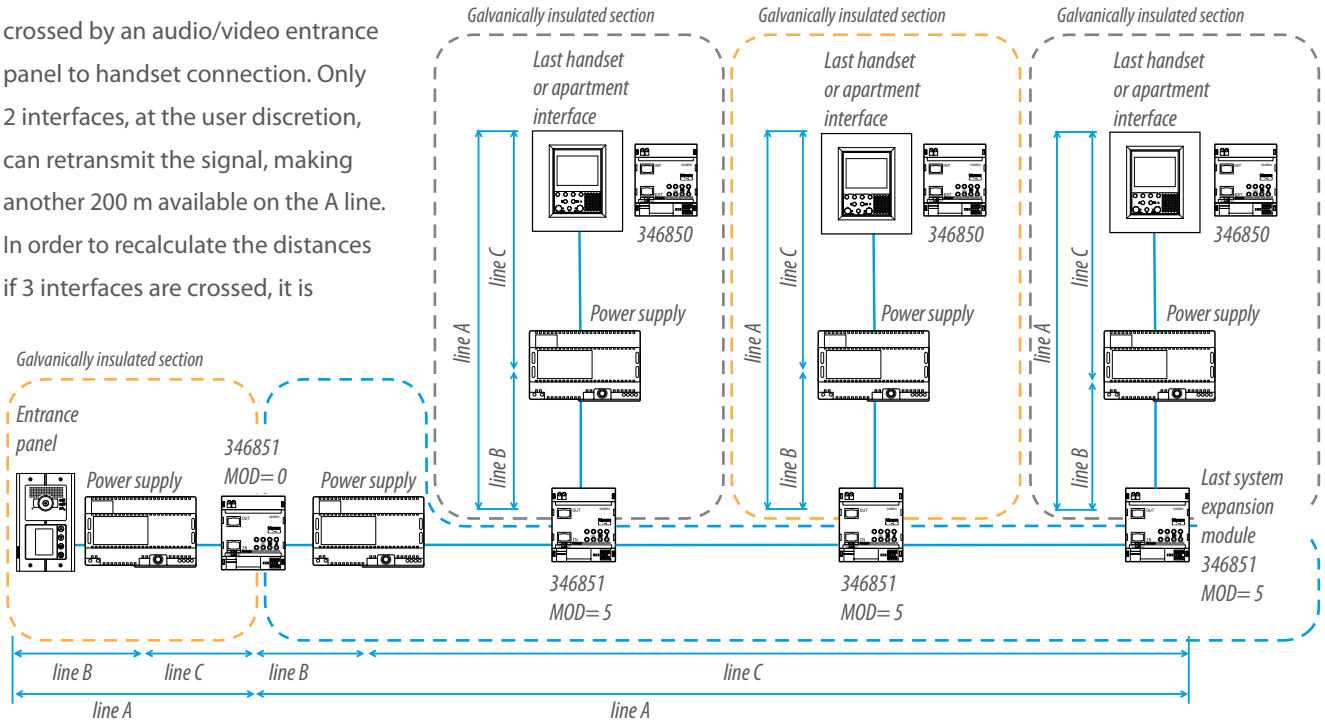
AUDIO OR VIDEO SYSTEM WITH APARTMENT INTERFACE, ITEM 346850

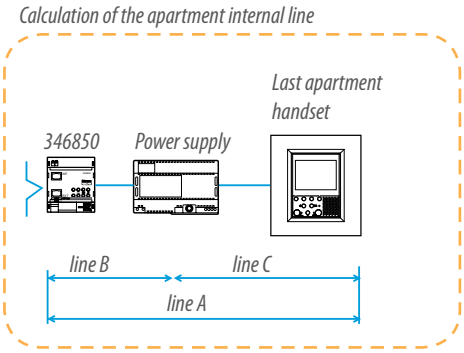


AUDIO AND VIDEO SYSTEM WITH WITH SYSTEM EXPANSION MODULES, ITEM 346851

Configured with **(MOD = 0/MOD=2)** and **MOD = 5**

A maximum of 3 interfaces item 346850 and item 346851 can be used in cascade. In this case, by interfaces in cascade it is meant interfaces crossed by an audio/video entrance panel to handset connection. Only 2 interfaces, at the user discretion, can retransmit the signal, making another 200 m available on the A line. In order to recalculate the distances if 3 interfaces are crossed, it is necessary to decide which interface will NOT retransmit the SIGNAL. This interface will then not be taken into consideration during the identification of LINE A.





GALVANICALLY INSULATED SECTION

In this case, the interface 346850 galvanically separates the sections of the system but DOES NOT regenerate the signal. The distance of 200 m is not between the system expansion module and the apartment interface, but between the expansion module and the last handset.